A MODEL FOR AN INCIDENT MANAGEMENT SYSTEM
FOR
SOUTH AFRICA

BY

Patricia Mary Reid

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Supervisor: Mr D. van Niekerk.

Co-supervisor: Prof. G. van der Waldt.

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DECLARATION

I declare that: "A Model for an Incident Management System for South Africa" is my own work, that all sources used or quoted have been indicated and acknowledged by means of complete references, and that this dissertation was not previously submitted by me or any other person for degree purposes at this or any another university.

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Signature

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Date

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AUTHOR: PATRICIA MARY REID

DEGREE: MASTER IN DEVELOPMENT AND MANAGEMENT

ABSTRACT

The loss of life, damage to property and to infrastructure caused by the impact of severe weather events and other events of natural and technological origin as well as environmental degradation, results in major economic losses for any country. However, in South Africa when events of this nature strike, those who suffer the most are the poorest of the poor who live in extremely vulnerable conditions and who are repeatedly exposed to severe hardship as a result.

Until 1994 such events were regarded as unavoidable and were therefore managed proactively.

However the floods which took place in the Cape Flats in 1994 were the turning point in the way significant events and disasters were managed in South Africa. The newly elected democratic government resolved to move away from the traditional thinking that nothing could be done to prevent such occurrences and resolved to adopt a new developmental approach in line with global trends by integrating risk reduction methodologies into developmental initiatives to build resilience in households, communities and areas known to be at risk.

Government's policy proposals included the introduction and implementation of a new Disaster Management Act to give effect to the new approach. It

recognised too that risk reduction was an ongoing activity that extended into the response paradigm. In this regard there was acknowledgement that the saving of lives and prevention of loss and damage to property, infrastructure and the environment also depended on rapid and effective response operations which in turn require mechanisms for integration, coordination, cooperative management and authority for decision making.

The requirement for the application of joint standards of practice and a uniform approach were key characteristics of the policy proposals.

Unlike other major countries in the world such as the United States of America, British Columbia, Australia and the Untied Kingdom, that have adopted a national incident management system, no national standard system currently exists in South Africa for the integrated and coordinated management of multi-agency response operations. However, the National Disaster Management Policy Framework which was promulgated in 2005, in giving effect to the policy proposals, calls for the development and implementation of regulations for a national standard for the management of multi-agency responses.

The model which has been derived from the research conducted in this study and from the researcher's experience in the field provides a generic framework on which a comprehensive multi-agency response management system can be developed for South Africa which could serve as a useful contribution to the system envisaged for the regulation.

The model for a Multi-agency Response Management System (MARMS) provides a seamless environment for integrating and coordinating operational responses; for tactical and strategic decision making; and for invoking extraordinary powers for the effective resolution of the situation and is applicable for any type of occurrence regardless of its origin - from a single agency response to a routine occurrence; to a multi-agency response to a single occurrence or multi-agency responses to a series of occurrences within a single jurisdiction; as well as to multi jurisdictional responses within a

particular sphere of local government and right up through the second sphere to national government.

The model was developed using grounded theory methodology through the use of Internet and focus group interviews to collect the data. During the process of analysing the data by open and axial coding, key elements emerged which were then clustered into categories from which the core concepts of the model emerged. The emergent core concepts were then dimensionalised which formed the major constructs of the model thereby ensuring that the model was grounded in the theory.

Constant comparisons were drawn with the experiences in the field throughout the process in order to ensure theoretical sensitivity. During the process of axial coding certain intervening conditions emerged which could negatively or positively affect its application. The developed model was therefore subjected to scrutiny by means of a quantitative attitudinal test amongst senior professionals involved in the field resulting in triangulation.

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ORIENTATION AND PROBLEM STATEMENT

1.1 BACKGROUND AND INTRODUCTION

The effective management of a disaster and of functional response measures can only be achieved through joint operations and co-ordinated action if resources are to be utilised optimally. However, despite the fact that these issues were alluded to in previous legislation (the Civil Protection Act 67 of 1977), the ordinances, regulations (South Africa, 1977b) and directives (South Africa, s.a.:1-19) were silent on standards for joint operations and co-ordinated action in responding to disaster or on any reference to the requirement for comprehensive Incident Command or Incident Management Systems.

However, the devastating floods which occurred in the Cape Flats in June 1994 (South Africa, 1999b:14) heralded a paradigm shift in the approach to the management of disasters in South Africa, causing Cabinet to reconsider the function of Civil Protection and the status quo.

In line with international trends (South Africa, 1999b:8), the government resolved to take a new look at the whole concept of Civil Protection and to move away from the popular belief that disasters are rare occurrences which are inevitable and unavoidable and that little can be done to prevent them or to reduce their effects.

There was a growing realisation globally that disaster risk could be reduced by building resilient individuals, households and communities through specifically designed developmental programmes and projects. At the same time there was equal global acknowledgement that not all disasters could be anticipated or prevented but that comprehensive contingency planning and the implementation of early warning mechanisms, emergency preparedness and effective and efficient

response measures are fundamental to reducing losses and damage to life, property, infrastructure and the environment (South Africa, 1999b:23).

This shift in thinking led to a process of wide consultation in South Africa which culminated in the publishing of a Green Paper on Disaster Management in February 1998 (South Africa, 1999b:15).

The Green Paper highlighted the need for a holistic mechanism for the management of disasters and clearly defined roles and functions (South Africa, 1998a:53). It served as the basis from which the White Paper on Disaster Management, which was gazetted in January 1999, evolved.

The White Paper put forward seven key policy proposals which included a call for new legislation to give effect to the proposals (South Africa, 1999b:52). This resulted in the promulgation of the Disaster Management Act in 2002 (Disaster Management Act 57 of 2002).

Schedule 4, Part A of the Constitution of the Republic of South Africa Act 108 of 1996 (South Africa, 1996:117), lists Disaster Management as a concurrent national and provincial competency. However, the key policy proposals set out in the White Paper, (South Africa, 1999b:13) are focused on the integration of risk reduction methodology into developmental programmes in South Africa. The primary aim of the policy proposals is to build a resilient South Africa by reducing vulnerability in households, communities and areas that are at risk. Section 26(g) of the Local Government: Municipal Systems Act 32 of 2000 gives effect to these proposals by including disaster management plans as core components of municipal Integrated Development Plans, thus giving a clear indication that risk reduction is most effectively applied locally. In support of this is the fact that when a disaster occurs or is a pending threat, the initial response normally takes place locally. Accordingly national government elected to invoke the provisions of section 156(4) of the Constitution (South Africa, 1996:65) and has assigned the disaster management

function to local government by way of national legislation – in this case the Disaster Management Act 57 of 2002. In terms of Act 57, all metropolitan and district municipalities are responsible for the practical implementation of functional disaster management in their area of jurisdiction (South Africa, 2002b:42).

One of the issues which was recognised as a shortcoming of the Civil Protection Act, and which was highlighted in the White Paper as requiring specific attention, was the need for integrated and co-ordinated actions and the need to adopt a common approach and standards in the management of disaster risk (South Africa, 1999b:9).

The aims of the disaster management policy (South Africa, 1999b:13), made specific reference to the improvement of "South Africa's ability to manage emergencies or disasters and their consequences in a co-ordinated, efficient and effective manner" and to "promote integrated and co-ordinated disaster management through partnerships between different stakeholders and through co-operative relations between all spheres of government".

The importance of co-ordination and the need for common standards of practice amongst the various agencies involved in combined response operations, both within the country as well as regionally and internationally is repeatedly emphasised in the policy document (South Africa, 1999b: 31, 33, 35, 56, 64).

The primary objective in responding to emergencies and disasters is the saving and protection of lives, property, infrastructure and the environment. Clearly this can only be achieved through the optimal and effective utilisation of resources (AFAC, 1992:2), which in turn, demand integrated and co-ordinated actions by the various response agencies.

The developments which have taken place in the disaster management environment in South Africa since 1994 provide strong support for the adoption of a

standard approach to the management of response to emergencies and disasters. However, in the researcher's practical experience in the field involving regular interaction with relevant stakeholders in all three spheres of government, it is apparent that no standard response management methodology or system is currently being applied in South Africa. However, the promulgation of the Disaster Management Act and the subsequent establishment of Disaster Management Centres at National, Provincial and Municipal levels of government provide the ideal mechanism to enable the introduction of a standard system for response management in South Africa (South Africa, 2002b:14, 30, 44).

1.2 PROBLEM STATEMENT

The problem being investigated in this research is the absence of a statutory national standard for management of multi-agency response in South Africa.

This research topic was selected because of practical problems experienced in the field.

Until the publication of the National Disaster Management Framework in April 2005 there was no legislative or regulatory requirement in South Africa for a standard approach to the management of disaster response or for interdisciplinary or inter-sectoral collaboration in the management of daily emergencies whether at local, provincial or national level.

The need for adopting a standardised approach to response management in South Africa was highlighted by the events surrounding the veld fires which took place in the Western Cape during the period 15–25 January 2000 (South Africa, 2000a:70).

As a member of the Task Team appointed by the Minister of Water Affairs and Forestry to review the fires, the researcher had the opportunity to interview the functionaries from the various disciplines involved in the disaster and to consult

with experts in the field. The lack of co-ordination was repeatedly referred to during the interviews where it emerged that it was applicable not only in respect of local response agencies, but was also a problem across jurisdictions and provincial boundaries. The arrival of 120 fire fighters from Gauteng who were unable to play a meaningful role because of lack of safety clothing and equipment is an illustration of the problem (South Africa, 2000a:70). According to recommendation 13 of the report (South Africa, 2000a:80), the implementation of an "Incident Command System" was required as a matter of urgency and regulations which would establish a standard for disaster and incident management in South Africa should be gazetted simultaneously with the Disaster Management Bill which was scheduled to be enacted in August 2001.

Although the requirement for the implementation of a standard system is now clearly provided for in the disaster management legislation and policy, a major obstacle which could threaten the successful introduction of such a system in South Africa, is that of attitude, behaviour, inter-agency rivalry and the issue of 'turf battles' which exist, even in response to day to day emergencies.

As a member of the Task Team responsible for the implementation of the N2 Incident Management System on behalf of the National Roads Agency in the Eastern Cape, the researcher had the opportunity to interact, make observations at the scene of incidents, to attend debriefings and to monitor reports of incidents.

The primary problem which causes general resistance amongst agencies involved in initial emergency response which require the services of allied response agencies, is the fear that the application of incident command methodology will allow one agency to exercise command over another agency or impinge on their authority. Whilst command and control methodology is applied within line function operations the tendency is for each agency to operate independently focusing on the job at hand, for example fighting the fire, whilst giving scant attention to control the incident as a whole. Consequently there is absence of overall management of

the *situation*; disjointed operations; lack of co-ordination and inter-agency communication; and no central reporting mechanisms.

The article *Raging inferno destroys chain store* (Anon, 2001:5), clearly illustrates the problem by describing the heroic deeds of the firemen fighting a major fire in Johannesburg, and then continues to report on the "total chaos" around the scene where motorists parked to view the fire, causing major obstructions and blocking emergency lanes and delaying fire engines.

The headlines in the Eastern Province Herald of 28 March 1989, *Body missing after rescue wrangle* (Anon, 1989:1) describes how the report of a body of a drowned youth which was discovered floating in the surf received a multi-agency response. However, although the body was seconds away from being recovered, it disappeared (and was still missing days later) while response agencies wrangled about who should be in charge of the recovery operation.

In this regard the report of the Department of Water Affairs and Forestry also cites a need for radical changes in both attitudes and behaviour of all role-players involved in response operations (South Africa, 2000a:76).

This problem of attitude, behaviour and inter-agency rivalry is not confined to South Africa. In the introduction to the Australian Inter-service Incident Management System (Australia 1992:1), it is acknowledged that "in the past parochial attitudes, internal politics, and lack of communication resulted in some poorly managed emergency operations".

Drabeck and Hoetmer (1991:58) in discussing factors impeding co-ordination quote the tendency of organisations to seek autonomy; staff commitment to professional ideologies; work autonomy; the fear that the identity of the group or organisation will be lost; and differences in benefits, as obstacles to co-ordination.

Given the fact that response from more than a single agency is required for the effective resolution of most incidents, and considering that in events of a more significant nature, many of these agencies may be working together for the first time; that each agency will be operating according to a different set of procedures; using individual communication systems; and generating own requirements for additional capabilities and resources, it is then not difficult to conclude that the possibility of gaps and duplication will arise (South Africa, 2000a:76).

Inevitably approaches will vary significantly from one to the other. There is not necessarily consistency in terminology nor is there a common communication system or radio frequency available to allow the various response agencies to communicate with each other on site which further encourages agencies to operate in isolation of each other (South Africa, 2000a:64, 68, 69).

Clearly the first deficiency lies in the absence of a common incident *command* system being applied in day to day operations by all response agencies, including private sector agencies at all three levels of government in South Africa.

The second deficiency is that there is no standardised approach or system being applied in South Africa for the coordinated *management* of significant events and disasters where multi-agency intervention takes place and which facilitates the natural escalation from routine occurrences to disaster response operations (South Africa, 2005:section 4.3.2).

1.3 RESEARCH AIMS AND OBJECTIVES

The aim of this study is to develop a standard model for the integrated and co-ordinated management of multi-agency responses which allows for the natural escalation of the management function in accordance with escalating demands of the situation.

The objectives of the study are to:

i.   explore and describe the concept of Incident Management Systems;

ii.   explore and describe the major sectors and disciplines involved in emergency response in South Africa;

iii. study the inter-relationship between disaster management, incident management and the relevant response agencies;

iv.   explore and describe both local and international perspectives of Incident Management Systems;

v.   explore the feasibility of introducing a national standard response management system in South Africa by researching the attitudes towards the concept and surveying the opinions of personnel of the major sectors and emergency response agencies; and

vi.   develop a model for multi-agency response management in South Africa based on regional and international benchmarks.

The key questions to be answered in this research therefore are:

i.   What is the key constituent of Incident Management?

ii.   To what extent is Incident Management already practised in South Africa?

iii. Is there a need and is it practical to introduce and legislate for a national standard system for Incident Management in South Africa?

iv.   What systems are currently in practice internationally?

v.   Which role-players have responsibilities in Incident Management?

vi.   Would the various agencies accept a national standard system and implement it diligently?

vii. Which agency should take the lead in the development, monitoring and evaluation of an Incident Management System?

viii. How could the effectiveness be monitored and evaluated?

ix.   Should a compulsory module on Incident Management be included in education and training curricula of the relevant sectors and disciplines?

1.4 KEY THEORETICAL CONCEPTS OF THE STUDY

The following definitions are included to ensure a common understanding and interpretation of the key theoretical constructs relevant to this research.

1.4.1 Grounded Theory

According to Strauss and Corbin (1990:23), grounded theory is not hypothesis testing research – in other words one does not start with a theory and then proceed to prove it, but it is rather inductively derived from studying a phenomenon. In other words grounded theory is an emergent research process, in that one selects an area of study and by a process of data collection, constant comparison and coding of the data, a core theory emerges. The core theory is then developed, verified, analysed and added to through theoretical sampling until saturation is reached (Strauss & Corbin, 1990:188). The emergent theory is thus grounded in the data that is collected.

1.4.2 Model development

According to Mouton (2001:176-177), the typical applications of model building are to either develop or build a new model or theory, or to improve on existing models and theories, using inductive and deductive strategies.

1.4.3 Incident Management

Incident management is based on the Incident Command System which, according to Drabeck and Hoetmer (1991:183), is designed to ensure a coordinated approach to the management of emergency response operations. It is a system that makes provision for command, control direction and decision making when multiple agencies are involved in combined response operations (also refer to section 2.3).

Firescope (1999:11) describes the Incident Command System as "a standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents without being hindered by jurisdictional boundaries".

1.4.4 Incident Management System

An Incident Management System provides a holistic framework for agencies involved in emergency response. This framework promotes effective and efficient management of an incident regardless of magnitude. Its purpose is to ensure effective joint operations across multiple agencies whilst not impinging on the authority or command systems within the individual response agencies. An Incident Management System does not confine itself to the operational level on site but also incorporates the tactical and strategic levels of incident management and decision making which can take place remote from the incident site. The system is designed in such a way as to progress from a single agency response to a routine incident and then to expand as the demand for additional resources increases and higher levels of decision making are required (AFAC, 1994:2).

1.5   VALUE OF THE RESEARCH

The intention of conducting this research was to develop a model for the management of multi-agency response focusing on mechanisms which will enable the natural escalation of the levels of management according to the demands of the situation and that will contribute to the development of a national standard for response management as envisaged by the National Disaster Management Framework (South Africa, 2005: Section 4.3.2).

It is envisaged that the model will contribute to the improved management of incidents and disasters in South Africa, which in turn will contribute to a reduction of loss and damage to lives, property, infrastructure and the environment. In addition

it is anticipated that this research will also underpin the need for the regulatory introduction of response management training into the curricula of all relevant response agencies (Department of Water Affairs and Forestry, 2000a:79).

1.6 METHOD OF INVESTIGATION

The following section seeks to describe the methodology that was adopted in the development of the model.

1.6.1 Empirical study

In order to achieve the aims and the objectives of the research and taking into consideration the variables in the topic, a thorough literature review was conducted employing both qualitative and quantitative research methods to access the problem under investigation.

The qualitative study was conducted using the grounded theory research approach (Strauss & Corbin, 1990:23).

In the building of the model the theoretical grounding of the study included both inductive and deductive strategies (Mouton, 2001:176-177).

The process adopted was to build an account of the phenomenon that identified the major constructs, the context of the process, and their relationships with each other which resulted in a much more descriptive theory of the emerging phenomenon (Becker, 1993:255).

The qualitative design allowed the researcher to establish various perspectives of the research problem from senior professional in the field. The focus group interviews enabled the researcher to explore first hand experiences, thus fulfilling

the ontological dimensions of qualitative research (Kruger & Van Schalkwyk, 2000:38).

1.6.2 Design

The design of the empirical study comprised a review of relevant literature and statutes, Internet, faxed and telephonic interviews as well as focus group interviews.

An extensive literature review was conducted which provided insight into global trends and methods in the management of multi-agency response which contributed to the formulation of a model that is consistent with international standards, but suited to the South African environment. The literature review also provided indications of best practice in instruments for measuring and assisted in the interpretation of results (De Wet et al., 1981:39-41).

Support and a positive attitude amongst response agency personnel (La Valla & Stoffel, s.a:283) are crucial to the success and the diligent application of a functional system. Accordingly the use of both qualitative and quantitative methodology in this study enabled the researcher to test the attitudes of individuals towards the development of a model for South Africa and then by means of a quantitative study to establish the relevance of the developed model.

For the Internet and faxed interviews a carefully structured questionnaire was circulated to potential respondents. Although it is more difficult and time consuming to analyse the responses to open-ended questions (Welman & Kruger, 1999:174), it was essential in this case so as to enable the respondents to express their opinions freely.

The use of electronic mail enabled the researcher to follow up on progress in a relatively inexpensive and practical manner. It also provided the opportunity for the respondents to interact on any queries which arose and to obtain clarities.

The purpose of the Internet and faxed interviews was to give support to the qualitative aspect of the focus group interviews (Welman & Kruger, 1999:173), to assist in the development of an appropriate model; to establish the extent to which incident methodology was currently being applied in South Africa; and to explore attitudes towards the introduction of a system in South Africa.

The interviews conducted via Internet and fax were followed by focus group interviews which provided the opportunity for the researcher to explore the first hand experiences, viewpoints and perceptions of response agency professionals (Welman & Kruger, 1999:196).

A list of topics relevant to the theme of the research was prepared to guide the focus group interviews.

In view of the fact that the researcher is experienced in the field of the study, the focus group interview method allowed the researcher to adopt an unstructured approach by introducing general topics and allowing the participants to express themselves freely rather than them having to respond to direct questions (Welman & Kruger, 1999:188-196).

It also enabled the researcher to use her expertise in the subject to probe and exploit the interviewing opportunity to its fullest and accordingly ensure that incomplete responses were clarified. The basic theme of the qualitative study was that it was phenomenological in that the interviewees' perspectives were the empirical point of departure (Welman & Kruger, 1999:188-190).

The approach also ensured that the diversities amongst the various response agencies were accommodated (Welman & Kruger, 1999:167).

The Internet, faxed and focus group interviews, observations and discussions conducted in the initial stages of the research allowed the researcher to discover as many categories as possible (Strauss & Corbin, 1990:181).

As the categories emerged and become saturated, the data collection process became more purposeful and focused and led to discriminate sampling.

Personal and further Internet interviews with discriminately selected individuals enabled the researcher to test and verify the relationship between categories and in particular, the developing theory (Strauss & Corbin, 1990:183).

As the data collecting progressed constant comparisons were made until saturation was reached. When all categories were saturated sorting took place and thereafter writing commenced (Strauss & Corbin, 1990:188).

The trustworthiness of the data was enhanced by conducting the focus group interviews as well as interviews via Internet and fax with three different groups of senior professionals and because the research design provided for various methods of data collection and analysis (Welman & Kruger, 1999:196). The researcher was also in a position to add to the trustworthiness of the research by accessing data from the various task teams and committees on which she served, as well as from personal experiences.

The quantitative study was conducted using an attitude scale (Welman & Kruger, 1999:155) to test the opinions and attitudes of respondents to the developed model (Welman & Kruger, 1999:89).

The measuring instrument which was used to assist the researcher to analyse the feasibility of introducing a model and the relevance of the model was a semantic differential scale (Welman & Kruger, 1999:157).

In the development of the model, comparisons were made with international experience and benchmarks. The completed model was tested against the opinions of international experts. These experts were discriminately selected to test and verify the model (Strauss & Corbin, 1990:187).

1.6.3 Respondents

The target population for this research was senior professionals from the spectrum of major response agencies in South Africa. Cluster sampling (Welman & Kruger, 1999:60-61) was used by drawing respondents from three existing groups – one from the Western Cape, one from the eastern half of the Eastern Cape and one from Gauteng – as the sample. In total 89 individuals were invited to participate in the study of which 24 responded.

Each respondent is a senior professional involved in emergency response from the following sectors and disciplines:

- Disaster Management;
- Emergency Communications;
- Emergency Medical Rescue Services;
- Fire Services;
- Metropolitan Police;
- National Sea Rescue Institute;
- Nature Conservation;
- Security Services;
- South African Maritime Safety Association;
- South African National Roads Agency;

- South African Police Service;
- South African National Defence Force; and
- Traffic Services.

Discriminate sampling of national and internationally recognised experts who participated in personal and Internet interviews and telephonic interviews was used in the later stages of the theory development and testing of the completed model.

1.6.4 Data collection and analysis

By using the grounded theory approach for the qualitative research design, rigorous analytical procedures fundamental to the process (Strauss & Corbin, 1990:74) comprising open coding were used by means of:

- asking questions;
- making constant comparison;
- conceptualisation;
- labelling;
- grouping and the formation of categories;
- note taking;
- memo writing; and
- the use of diagrams.

In terms of the qualitative study, constant comparisons and analysis of the data took place as the emerging theory developed. Testing on a continuous basis which is fundamental to grounded theory was ongoing and took place in every step of the process (Strauss & Corbin, 1990:187).

When all categories were saturated sorting took place and thereafter writing commenced (Strauss & Corbin, 1990:192).

In order to ensure that the researcher maintained theoretical sensitivity, the techniques described by Strauss & Corbin (1990:75-95) were used throughout the process:

- use of questioning;
- analysis of a single word, phrase, or sentence;
- the flip-flop procedure;
- the making of comparisons; and
- waving the red flag.

1.6.5 Methods taken to ensure validity and reliability

The adoption of the grounded theory approach which allowed emergence of a theory from a phenomenon ensured that the researcher did not influence the study with preconceived ideas and theories but rather allowed the theory to emerge from the phenomenon. The researcher was therefore, not blinded by the value of the emerging data. The credibility of the study was enhanced by basing the research on more than one group and making comparisons (Strauss & Corbin, 1990:183).

The questionnaire for the quantitative study included questions to test both attitude and opinion. The questions were evaluated on a 5-point summated attitude scale (Lickert scale) and the results analysed statistically (Welman & Kruger, 1999:155-162).

The inclusion and integration of the quantitative study to validate the qualitative analysis resulted in triangulation (Strauss & Corbin, 1990:19).

Testing and measuring against international benchmarks as well as the use of discriminatory sampling by testing the model against international expert opinions, in focus group interviews and in the Internet and faxed interviews, added to the trustworthiness, reliability and validity of the study (Creswell, 1994:158).

1.7 ETHICAL CONSIDERATIONS

Circulating an open invitation to three existing groups of professionals ensured that participation was in a voluntary capacity. Respondents were given the opportunity to remain anonymous and were assured that their confidentiality would be respected. Permission was sought in writing to refer to them by name in the study. Participants were encouraged to participate freely in the focus group interviews and were assured of their freedom to withdraw from the process at any time. The research was conducted in a relaxed, non-threatening, safe and secure environment.

Contact was also made with experts in the United Kingdom, Australia, the United States of America and South Africa to obtain their agreement to participate.

1.8 CONCLUSION

The model developed as a result of this study will contribute to the development and implementation of a national standard multi-agency response management system for South Africa.

It will set the standard which will ensure a natural escalation of levels of management in accordance with escalating demands for additional capabilities, resources decision making and authority in the event of significant events and disasters which are commensurate with the jurisdictional authority in the various spheres of government in South Africa.

In as much as other countries in the region and in the east have already adapted South Africa's disaster management policy and legislation for use in their countries, the model could also just as well contribute to establishing joint standards of practice for response management in the region.

The research design described in this chapter establishes the foundation for the development of the model. In the following chapters the theoretical framework of response management will be considered and the statutory and regulatory environment in South Africa will be explored; this will be followed by the report on the field work and findings; thereafter the model will be presented and finally this report will culminate with the conclusions and recommendations.

CHAPTER 2

INCIDENT MANAGEMENT SYSTEMS: A THEORETICAL FRAMEWORK

2.1 INTRODUCTION

When a wide range of role-players who may never have worked together previously are involved in performing a variety of operational activities in response to the same occurrence, the approaches adopted will invariably differ. Clearly in such circumstances misunderstanding, duplication and omissions are bound to occur which in turn could result in total confusion. Uniformity in approach in respect of aspects such as leadership, management and authority; integrated operations; common terminology; compatible equipment; integrated inter-agency communication and the coordinated utilisation of resources are all essential elements if responses are to be rapid and effective (Christen *et al.*, 2001:2). According to Christen *et al.* (2001:3) one mechanism to resolve the problem is to implement an Incident Management System.

The introduction of National Incident Management Systems is not a new concept, as they have been introduced in many countries around the world since their inception in Southern California in the 1970s (Ruff, 1999:1; Cardwell & Cooney, 2000:1).

The purpose of this chapter is to provide a theoretical understanding of the concept of incident management systems. The chapter aims to identify generic characteristics inherent to incident management systems. The first part of the chapter aims to establish an understanding of key terms associated with emergency response and then to derive standard terminology which will be used in the model to be developed. In order to further explore the generic components which constitute an incident management system the origins of incident

management systems will be researched. This will be followed by a review of international best practices in incident management and finally a distinction will be drawn between incident *command* systems and incident *management* systems.

This chapter will be used as the basis for a comparative analysis of the findings of the research conducted in the field. This will ultimately lay the foundation for the development of a model for the integrated management of multi-agency response for South Africa.

2.2 KEY THEORETICAL CONSTRUCTS OF INCIDENT MANAGEMENT SYSTEMS

This part of the chapter aims to establish an understanding of the key theoretical constructs of the study by exploring various interpretations of key terms and then drawing comparisons from which standard terminology can be derived and on which the researcher will base the development of the model. During the process any generic characteristics which emerge, that can contribute to the model, will also be identified.

2.2.1 Response

The Chambers 20th Century Dictionary (1983:1102) describes the term 'respond' simply as "to react".

The White Paper on Disaster Management (1999:73) describes response as "activities that are arranged to deal with emergency situations and can involve the evacuation of people, dealing with accidents, extinguishing fires, etc".

Response in the context of disasters is defined in the Disaster Management Act (2002:10), as "measures taken immediately after a disaster in order to bring relief to people and communities affected by the disaster".

Similarly the National Emergency Management Agency (NEMA) of Nigeria (2001:xvii), describes response as "the activities to address the immediate and short term effects of an emergency or a disaster." It continues by stating that "response includes immediate actions to save lives, protect property and meet basic human needs".

Carter (1992:245) includes both time and operational dimensions in the definition by describing response as "the actions taken immediately prior to and following disaster" and these include actions focused primarily on saving life and protecting property and to dealing with disruptions, damage and other effects. However, in this context Carter (1992:57) introduces the term "emergency response" attaching a time frame of 2– 3 weeks but then concedes that longer term measures may also constitute response.

The United Nations International Strategy for Disaster Reduction (2004:6) definition incorporates both the dimensions of time and the nature of actions which take place during response. Although it refers to response taking place "during or immediately after a disaster" it elaborates by stating that response "can be of immediate, short term or protracted duration".

Clearly 'response' embraces operational actions or interventions whether of immediate or protracted duration which focus on dealing with the effects of an event, whether routine or extraordinary, and includes actions aimed at the saving of lives, providing for humanitarian needs and the protection and limiting of damage to property, infrastructure and the environment.

In summary the term 'response' in the context of this study constitutes the following key theoretical elements:

- type of operations involved;

- dimensions of time;
- magnitude; and
- purpose.

Having examined the term response, the next section aims to identify the categories of role-players involved in response.

2.2.2 Response Agency

The term 'agency' is commonly used as a generic term to describe any entity that provides response assistance whether from within a sphere or sector of government; a non-governmental organisation; a community based organisation; or the private sector (Firescope, 1999:3; Perry, 2003:405; Conner, 1997:14).

La Valla and Stoffel (s.a.:239) use the term "field response" for on site agencies and describe them as "the doers on the scene ... concerned with immediate action, size up, reporting, and carrying out the SOPs (Standard Operating Procedures) to save life and property". From this description it can be concluded that response can involve more than one agency.

The Emergency Management Manual of the State of Victoria in Australia (1999:7-29) defines a response agency as "an agency having a role or responsibility under the State Disaster Response Plan or the response arrangements. Response agencies can be *control* or *support* agencies for different emergencies". This concurs with La Valla and Stoffel that response can involve a range of response agencies but adds a hierarchy dimension by indicating that one agency takes the lead and the others act in support of the lead agency.

Granot (1997:1) elaborates further on the previous two dimensions by stating that emergency response invariably calls for the combined efforts of a diverse range of agencies which include "police, fire, search and rescue teams, ambulance corps,

and back-up health facilities" as well as other support services which circumstances may demand. Granot cites a wide range of additional agencies that may be involved such as "utilities, sewerage, sanitation, commercial companies and industrial manufacturers." In the case of events of significance, response agencies from different spheres of government as well as from religious and community groups may be involved. Granot concludes by stating: "Taken together, it is clear that a substantial number of diverse organizations are likely to be active in the various phases of emergency response."

Granot (1997) also reinforces the concept discussed in the previous section that the duration of response interventions is not limited to immediate, short term actions.

In summary, the term response agency can refer to any agency having a role or responsibility to respond to any occurrence and can therefore include a myriad of disciplines from various sectors, jurisdictions and spheres of government as well as the private sector, non-governmental and community based organisations. These may include:

- officials from government, municipal organs of state and external jurisdictions;
- emergency and essential services response personnel;
- non-governmental organisations;
- community based organisations;
- representatives of parastatals such as utility companies;
- community volunteers; and
- the private sector.

Two further key elements have emerged from this section of the research. Notably a hierarchy factor is introduced whereby agencies are classified according to their span of control in a multi-agency response. The agency with statutory responsibility to deal with the primary cause is identified by the term 'lead agency' whereas all of

the other agencies involved in the response are referred to as 'support' agencies. The second key element which emerged is that the concept of more than one level or 'layer' of response is introduced which engages the involvement of agencies from various spheres of government and external jurisdictions.

The notion of levels or spheres of response and the hierarchy factor both within and amongst response agencies will be explored further in the following sections which examine the nature of occurrences involving urgent response and key concepts relating to the management of personnel and resources during response operations.

2.2.3 Incidents, emergencies and disasters

The discussion which follows will show evidence that certain of the terms commonly applied to occurrences requiring urgent response are used interchangeably. This section of the study will firstly aim to examine each of the commonly applied terms and then to identify distinguishing characteristics which emerge and that are relevant to the study and can contribute to the key theoretical constructs of the model to be developed.

2.2.3.1 Incident

Generally an incident is described as a relatively minor occurrence or episode which is of brief duration (Chambers 20th Century Dictionary, 1983:635).

According to Firescope, (1999:11) an incident is an occurrence requiring urgent response by emergency services in order to prevent or reduce loss of life, injury, damage to property, infrastructure and the environment.

The White Paper on Disaster Management (South Africa, 1999:73) concurs with this precept but suggests that an incident does have the potential to escalate to more serious proportions.

La Valla and Stoffel (s.a.:11) categorise an incident as an occurrence which falls into the routine scope and capabilities of emergency services operations but add that it is normally an unpleasant event requiring urgent response which may either be expected or may occur suddenly or accidentally. The potential for escalation is also suggested by reference to the fact that it may require the involvement of more than one agency.

Drabek and Hoetmer (1991: xix) on the other hand only use the term "emergency" but describe three levels of emergency. A level 1 emergency is described as an "unexpected occurrence" that can be dealt with by a single agency and that does not exceed the operational and resource capability of that agency but may require response by other disciplines. This definition includes the same characteristics as La Valla and Stoffels' definition of an incident.

Clearly in the context of this study the term 'incident' is a general term applied to the first level of response. It refers to an occurrence of limited magnitude which does not exceed the response capability of a single response agency or the capabilities of agencies from other disciplines who are acting in support of the primary agency for the purposes of preventing or reducing loss of life, injury, disease, damage to property, infrastructure or the environment which may occur as a result of the incident.

2.2.3.2 Emergency

The White Paper on Disaster Management (1999:71) refers to an emergency as "a sudden and usually unforeseen event that calls for immediate measures to minimise its adverse consequences".

In South Africa the term 'significant event' is used to describe an event which is of such magnitude that extraordinary measures are required to deal with it effectively but does not necessarily constitute a disaster (South Africa, 2005:70).

La Valla and Stoffel (s.a.:11) define an emergency as follows: "An unexpected event involving shortages of TIME and/or RESOURCES which places life and/or property in danger; and which requires immediate response; requires response beyond normal incident response resources; normally a single incident site".

An unexpected occurrence which exceeds the capability and resource capacity of more than two sectors in a particular sphere of government and which involves response from external agencies, constitutes a level 2 emergency according to Drabek and Hoetmer (1991: xix). The definition also refers to the requirement for the application of mechanisms to engage "cooperative efforts" of support agencies in terms of personnel and resources to deal with the situation.

Despite the fact that the terms 'incident' and 'emergency' may be used interchangeably, the important concept that has emerged, is that in the context of this study the two terms are essentially used to differentiate between the levels of response required in relation to the magnitude of the occurrence; that magnitude is measured in terms of available capability and resources required to deal effectively with the occurrence; and that as a consequence the level of response escalates accordingly.

The research also revealed commonalities in the characteristics which distinguish between what constitutes the first and second levels of response. Clearly, the key characteristic which triggers a second level of response is the demand for extraordinary measures in terms of operational capability and resources; that in turn involves the engagement of external role-players from a multiplicity of sectors.

This calls for a higher level of management in order to apply multi-agency operations effectively to deal with the situation.

A significant factor worthy of note, which emerged from this aspect of the research, is that although the second level of response requires the application of extraordinary measures, it clearly does not put the scale of the occurrence beyond the capabilities or jurisdiction of the responding agencies nor is it of such magnitude and impact that it disrupts the normal functioning of society. However, what has emerged is the need for mechanisms to ensure the procurement and coordination of additional resources, particularly with reference to scarce resources. This purports to a third level of response.

2.2.3.3 Disaster

This section of the study seeks to establish the key characteristics which distinguish a disaster from incidents and emergencies and then to consider if it bears any relationship to the levels of response which emerged from the research conducted in the previous section.

La Valla and Stoffel (s.a.:11) concisely define the term 'disaster' as "when the resources available are exceeded", but also state that a disaster situation is comprised of multiple incident sites.

In the United Kingdom's guideline, *Dealing with Disaster*, differentiation is only made between two situations: major incidents and disasters. In the guideline the broad definition of a major incident is described as "any emergency that requires the implementation of special arrangements by one or more of the emergency services, the NHS (National Health Service) or the local authority ..." (United Kingdom. Home Office, s.a.:1).Their definition of a *disaster* is closely aligned to that in South Africa's Disaster Management Act (South Africa, 2002b:6).

Carter (1992: xii) identifies four characteristics which separate a disaster from other events. The first focuses on *disruption* in the context of the speed of onset, predictability and extent. The second relates to effects or *impact on people* which includes death, injury, disease and resulting hardship. The third characteristic is *damage to or destruction of* infrastructure such as lifeline facilities, essential services and communications. Finally it identifies *humanitarian needs* such as medical care, shelter, food, clothing and other social needs.

The United Nations International Strategy for Disaster Reduction (UNISDR, 2004:3) defines a disaster as "a serious disruption of the functioning of a community or society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources."

In South Africa the definition of a disaster in the Disaster Management Act (2002:6) supports the characteristics included in Carter's definition and compares favourably with that of the UNISDR, but spells out the fact that the term 'disaster' does not only apply to events affecting an extensive geographical area or areas but also embraces events affecting a limited geographical area or areas. It also provides a comprehensive description of the likely effects or impact of the occurrence on the elements at risk, although it does not categorise them in the same manner.

The South African definition (South Africa, 2002b:6) includes an additional important characteristic by including provision for occurrences which are "threatening" to occur.

As indicated in the previous section, Drabek and Hoetmer (1991:xix), do not use separate definitions to differentiate a single manageable day-to-day incident from incidents of greater magnitude and disasters, but rather use the term 'emergency' which is defined at three levels according to magnitude. On the other hand Perry (1991:201), makes a differentiation between what he refers to as 'routine

emergencies' and 'non routine events'. He argues that routine emergencies are incidents which occur regularly and can largely be anticipated and whilst their impact may result in devastating consequences and extreme hardship for those directly affected, the impact does not necessarily have the same or any effect on the community as a whole. He views them as emergencies which can be dealt with within existing organisational arrangements by the normal emergency response agencies, whereas by comparison, disaster events have significant impacts on the social fabric of the community. He defines disasters as "non routine events in which societies or their larger subsystems (e.g. regions or communities) are socially disrupted and physically harmed." He further elaborates that the key defining characteristics of such events are:

- the length of forewarning;
- the magnitude of impact;
- the scope of impact; and
- the duration of impact.

From the research conducted it is fair to conclude that a disaster is characterised by: the speed of onset; the predictability and origin of the event; the magnitude of the event; the extent of its impact on people, the economy, infrastructure and the environment and the consequent disruption of the normal functioning of society to such an extent that it exceeds the capacity of the surviving elements to deal with the consequences using all available resources, and; extraordinary measures are required to limit and deal with its effects.

The defining characteristics derived from this discussion, which distinguish incidents and emergencies from a disaster are, firstly, the fact that the scale of the occurrence is such that it exceeds available local capacity to deal with the effects and secondly, the normal functioning of society has seriously been disrupted.

It is logical to conclude that in such circumstances where the existing legislation, powers and contingencies of emergency and essential response agencies are inadequate to deal with the effects, the need arises to take extraordinary measures and to engage additional resources from outside of legislative and jurisdictional boundaries (Drabek & Hoetmer 1991:xviii).

Clearly this inevitably calls for a higher or fourth level of response as it demands the engagement of the next sphere of legislative and jurisdictional authority; executive decision making and direction; and may even require an official declaration to allow the necessary additional powers to be invoked to manage the occurrence effectively (Drabek & Hoetmer, 1991:xix; South Africa, 2002b:26,28,40,54).

Although it has been shown that the use of the terms discussed in this section is not necessarily consistent, there is commonality in respect of what theoretically constitutes four distinct levels of response. In order to eliminate any confusion as well as convey the concept of escalation, it appears that using a collective term such as "levels of response" and then attaching a numerical tag to each level to indicate escalating levels of response is more appropriate and less likely to create confusion. This approach has been applied in the Table below which captures the key theoretical concepts which have emerged from the research so far.

Level of response	Nature of Response	Trigger which activates next level
I	Single agency response	Support required from other disciplines in the jurisdiction to manage the *situation* effectively
II	Multi-agency response operations	Normal internal agency capability and resource capacity depleted; procurement and deployment of additional resources required to deal with the situation effectively
III	Multiple inter-agency response operations	Magnitude exceeds available capability and resources; spans across jurisdictional and/or legislative boundaries
IV	Multiple jurisdictional response operations	Engagement of resources from outside jurisdictional boundaries; additional powers invoked to deal effectively with the situation

Table 2.1: Levels of response

Having established that there are four levels applicable to urgent response, the next section will explore key concepts relating to the management component of personnel and resources during response operations.

2.2.4 Command, control, coordination and direction

In this section the terms command, control, coordination and direction will be explored to establish how they relate to the management of response operations.

Three of the terms – command, control and coordination – are frequently used together in the context of urgent response operations. This view is supported by Victoria State Emergency Service (VICSES) which refers to the terms as the "three Cs" (1997:2.5).

Chambers 20th Century Dictionary (1983:273,252) describes **command** as "to order" or "to exercise extreme authority over", "to influence or **control**" and the term '**control**' is described as "restraint", "authority, "**command**", "regulation". Clearly these descriptions illustrate synonymy between the two terms.

In the discussion which follows the terms command and control will be examined to establish whether, in the context of response management, they are in fact synonymous or whether clear distinctions can be drawn between the conceptualisation of the two terms. This will be followed by a comparison, in the same context, of the terms command and control with the term coordination. Finally, the concept of direction will be examined to establish its relationship with the other three terms. The section will conclude with a summary of terms and characteristics which will subsequently contribute to key theoretical elements of the model to be developed.

2.2.4.1 Command

In the United Kingdom (s.a.:15) command is described as "the authority for an agency to direct the action of its own resources (both personnel and equipment)", and is essentially seen as part of normal day to day activities which take place within the functional area of a specific agency's operational response activities.

VICSES (1997:2.5) concurs with this approach in that command implies legal authority to command personnel and resources within that agency's operational mandate and to make decisions on operational issues.

The concept command can thus be construed as direction which takes place vertically and is confined to the operational role and tasks of a particular response agency which cannot be exercised by one organisation or agency over the personnel and resources of another, unless by prior agreement.

2.2.4.2 Control

Drabek and Hoetmer (1991:44-45) refer to the "command and control model" as having its origins in the military context and state that the terms imply an inflexible, authoritative, "top down" approach. In the context of managing emergencies and disasters they argue that the need for the approach of a single overall authority was based on a number of assumptions which related to the magnitude of the event, the collapse of systems and services and the premise that those affected were helpless and dependent and that authority therefore had to be imposed by an external source in order to get the situation under control.

Drabek and Hoetmer refute these assumptions and argue that whilst conceding that there is indeed a need for authority, it should not be a centralised external authority. They argue that the legitimate authority which already exists locally within the scope of the various functional responsibilities of those involved in dealing with

day to day emergencies should merely escalate according to the need to coordinate emerging resource requirements.

In the United Kingdom (s.a.:49) on the other hand, control is described as "the authority to direct strategic and tactical operations in order to complete an assigned function and includes the ability to manage the activities of other agencies engaged in the completion of that function. The control of the assigned function also carries with it the responsibility for the health and safety of those involved."

VICSES (1997:2.5) focuses the concept of control on the holistic management of the *situation* rather than on controlling personnel. Control is applied when a number of agencies are assisting with operations and spans across those response agencies. It is vested in a particular agency by legislation or in terms of a response plan, with the other agencies providing a supportive role.

Despite the fact that the Chambers 20th Century Dictionary (1983:273,252) refers to the terms command and control synonymously, as illustrated at the start of the section, a distinct differentiation is drawn between the terms when they are used in the context of response operations.

In the next section a comparison of the terms command and control will be drawn with that of coordination.

2.2.4.3 Coordination

Chambers 20th Century Dictionary (1983:276,654) defines coordination as "to adjust the relations or movements of", "to combine or integrate harmoniously". Integrate is described as "the unification of diverse elements into a whole".

Dealing with Disasters (United Kingdom, s.a.:49) describes coordination similarly using the words "harmonious integration".

The National Inter-agency Incident Management System's (NIIMS) glossary of terms for the Incident Command System describes **coordination** as a process which can take place *within* an agency or *amongst* agencies. It does not involve command which takes place within the operational activities of an agency but is rather a process by which the optimal utilisation of resources in accordance with the situation is effected (FIRESCOPE, 1999:6).

The focus of coordination according to VICSES (1997:2.5) is essentially on the procurement and optimal utilisation of resources in accordance with the demands dictated by the situation. VICSES concurs that it takes place within an agency in which case it is applied in the context of command but that it is also applied across agencies in which case it is vested as a function of the authority in control. In other words it is applied both vertically within agencies and horizontally across agencies.

In conclusion, despite the fact that the definitions from the Chambers 20th Century Dictionary imply that the terms command and control can be used synonymously, characteristics have emerged from the research which enables the differentiation of the one from the other. 'Command' emerged as the term most commonly used to refer to the legitimate authority exercised within the normal operations of a single essential or emergency response agency. This premise is concurred with the arguments by Drabek and Hoetmer (1991:44-45).

The need for coordination arises as soon as the capabilities or resources required exceed the normal capacity of the initial or primary response agency. It refers to the systematic process whereby capabilities and resources of multiple and diverse origins are harmoniously integrated and optimally utilised to achieve a set of predetermined objectives. Accordingly, it can be seen as the next level of response management at which the priorities for the allocation of resources are determined and where the overall management of the operational response operation takes

place. It is, therefore, sometimes referred to as the **tactical** level of response management (United Kingdom, s.a.:16).

Control on the other hand is shown to imply a higher level of authority and refers to a higher or strategic level of response management.

2.2.4.4 Direction

Direction differs from that of control in that it comes into effect when events of major significance and/or magnitude occur and applies to the executive management of "massive" response efforts whereas control is applied to regulate and guide an emergency operation and to coordinate the optimal utilisation of resources. (La Valla & Stoffel, s.a.:235)

The requirement for this level of response management, involving senior representatives of the lead or primary agencies who are vested with the authority to make executive decisions and with wider powers, is supported by the approach adopted in the United Kingdom where it is undertaken by what is referred to as the "Strategic Co-ordinating Group" (United Kingdom, s.a.:16).

In the same context Drabek and Hoetmer (1991:208-209) describe the activities related to policy making as being undertaken under the auspices of a "coordinator or director" in an "Emergency Operations Centre" which in turn is described as a place of decision making and is the "master coordination and control point". This concurs with the approach adopted by the United Kingdom whereby executive or policy decisions are made at a higher, strategic level of response management.

It is apparent that direction is the term used to describe a fourth level of management which is triggered when the response demands go beyond legislative and jurisdictional boundaries and therefore require higher authority, decision making and wider powers. An added dimension is the concept of such decisions

being made by a group of executives under the leadership of an individual who has vested powers and that strategic decision making is undertaken in a fixed location away from on-site operations.

It can be concluded that as the nature and magnitude of response operations escalate so do the need for higher levels of management emerge. These levels are directly influenced by resource and capability factors. The terms command, control, coordination and direction are the terms used to indicate the span of management and the levels or scope of legislative and jurisdictional authority applicable at the various levels at which response is managed.

The following Table seeks to elaborate on Table 2.1 in section 2.2.3 by adding the management dimensions which have emerged from this section of the study.

Level of response	Nature of Response	Span of management	Scope of authority	Term applied to level of legislative and jurisdictional authority	Trigger which activates next level
I	Single agency response	Vertical	Vertical decision making and management of *own resources*	Command	Support required from other disciplines in the jurisdiction to manage the *situation* effectively
II	Multi-agency response operations	Spans across agency commands	Control of a *situation* involving multi-agency operations	Control	Normal internal agency capability and resource capacity depleted; procurement and deployment of additional resources required to deal with the situation effectively
III	Multiple inter-agency response operations	Spans across multiple control entities	Coordinated procurement and deployment of resources	Coordination	Magnitude exceeds available capability and resources; spans across jurisdictional and/or legislative boundaries
IV	Multiple jurisdictional response operations	Spans across jurisdictional boundaries	Executive decision making and authority for management of response	Direction	Engagement of resources from outside jurisdictional boundaries; additional powers invoked to deal effectively with the situation

Table 2.2: Table illustrating the scope of 4 levels of response management

Taking the aforementioned aspects of the study into account and having established clear linkages between the nature and magnitude of occurrences and the parameters which trigger higher levels of response, it is necessary to review the theoretical constructs of the mechanisms or systems for the natural transition of response management from one level to the next which are being applied internationally. The conclusions so derived will further contribute to the development of the model.

2.3 THE ORIGINS OF INCIDENT MANAGEMENT SYSTEMS

The concept of Incident Management Systems originated following the devastating bushfires which occurred in Southern California in the United States of America in 1970 (Toops, 1990:1). As a result of difficulties experienced by the lack of coordination of the efforts of many agencies involved in fighting the devastating fires, an alliance of fire agencies from the various spheres of government conferred to develop a formal system which would serve to provide a framework within which multiple fire agencies could integrate and coordinate their fire fighting operations. The intention was to develop and adopt a uniform approach which would contribute towards the achievement of more effective responses to major calamities.

The initiative was prompted by the difficulties experienced by fire fighters who came from the various agencies in the different spheres of government and from different states to fight the Californian fires. Despite the fact that the fire fighters earnestly tried to fight the fires in an integrated manner, they were severely hampered by the lack of standardised approaches and equipment. One of the most critical problems encountered was the lack of a common emergency radio communication frequency. However, even in instances when communication could take place, needless losses occurred because of critical time being wasted due to misunderstandings and a lack of common terminology and standardised equipment (Toops, 1990:31).

The consortium was called FIRESCOPE (Fire-fighting Resources of Southern California for Potential Emergencies) and the concept they developed was the Incident Command System (ICS) (Cardwell, 1994:64).

According to Toops (1990:31) although the concept of the ICS which was developed as a result of the Firescope initiative proved to be effective, its implementation was limited to Southern California and at that stage only applied to the fighting of fires.

Then in 1981, the National Parks Service, together with other relevant agencies such as land management and fish and wildlife services, recognised the need to expand on the ICS concept. They combined to take the initiative to establish a system which would apply to agencies across sectors and disciplines and which would also take escalating levels of response across jurisdictions into account, as opposed to the ICS which was confined to the fire fighting discipline and which was territory bound. They called the system the National Inter-agency Incident Management System (NIIMS) (Toops, 1990:31). According to Toops (1990:31) the ICS went on to become "the backbone of the NIIMS".

Subsequently incident management systems were introduced in many states in the United States of America, North America and other countries around the world.

In Australia, for example, the Australian Association of Rural Fire Authorities developed the Australian Inter-service Incident Management System (AIIMS), in the early 1980s. The AIIMS was an adaptation of the National Inter-agency Incident Management System (Australia, 1992:1).

British Columbia established an operational standard for incident management which is referred to as BCERMS – British Columbia Emergency Response Management System (British Columbia, 2000:i), and in the United Kingdom

guidelines were introduced for combined response which focuses on "Integrated arrangements for Emergency Management" (United Kingdom, s.a.:3).

Although the scope of this study does not include a detailed investigation into Incident Command Systems, it is necessary to establish the relationship between ICS and Incident Management Systems (IMS). The following section will therefore present an overview of the key concepts constituting ICS and will then seek to establish the application of ICS within the context of IMS.

2.3.1 The Incident Command System (ICS)

Firescope (1999:11) describes the ICS as "a standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents without being hindered by jurisdictional boundaries". The British Columbia Emergency Response Management System (BCERMS) (2000:ii) also uses the Firescope definition.

According to FEMA (2000:1-2) the Incident Command System is "the model tool for command, control, and coordination of a response and provides a means to coordinate the efforts of individual agencies as they work towards the common goal of stabilizing the incident and protecting life, property, and the environment."

Drabeck and Hoetmer (1991:276) describe the incident command system in more detail as a system consisting of procedures for controlling personnel, facilities, equipment and communications which is applicable to routine daily operations as well as to larger and complex incidents.

Essentially the ICS is a generic vertical command system which can be applied to the internal operational activities of any agency responding to an occurrence. Its advantage is that it ensures a standard and thus coordinated approach in situations

where the efforts of a collective group of agencies from the same discipline (for example fire fighters) but from different jurisdictions need to combine their efforts to achieve the objectives of the operation. Similarly the same will apply when multiple agencies from different disciplines are involved in combined operations such as search and rescue for example – providing of course that ICS has been adopted as standard daily operational procedures by all agencies involved (FEMA, 2000:1-12).

The ICS is applicable to any occurrence and is based on the following key characteristics:

- common terminology;
- a modular organisation;
- integrated communications;
- unity of command;
- a unified command structure;
- consolidated Incident Action Plans;
- a manageable span of control;
- designated incident facilities; and
- comprehensive resource management (FEMA, 2000:1-12).

The key characteristic of the ICS applicable to this study is that it is designed to coordinate the efforts of multiple agencies under a unified command and therefore establishes the foundational management mechanisms for the first and second levels of response identified in section 2.2.3 of this chapter, and from which, further levels of response management evolve.

2.3.2 Inter-agency Incident Management Systems

The fact that the ICS has been widely adopted emphasises the fact that effective and efficient multi-agency response is dependent on the extent to which individual

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agencies apply common operating procedures. It is, therefore, the building block on which the successful management of response is based.

Toops (1990:31) describes an Inter-agency Incident Management System as "a protocol for managing people and equipment in the midst of crises" and attributes the success of the system to the fact that even though response may involve many agencies, each participant uses standard operating procedures, uniform terminology and common radio frequencies.

According to the Australian Inter-service Incident Management System (AIIMS) incident management denotes a holistic system which embraces the concepts of co-ordination, command and control of response to any occurrence of any magnitude. Its purpose is to ensure effective joint operations across disciplines and sectors at all levels, whilst not impinging on the authority or command systems within the individual response agencies (Australia, 2004:12).

It can be concluded that Incident Management as opposed to Incident Command, does not confine itself to the operational level of on-site management but provides a framework which allows response management to expand naturally as the situation escalates in magnitude and/or complexity and takes the management of the response from the site, into the boardroom and even beyond state and national spheres as the demand dictates.

The table developed so far in this chapter has been elaborated on in the Table 2.3 below to visually illustrate the interface between incident command and incident management.

Type of system	Level of response	Nature of Response	Span of management	Scope of authority	Term applied to level of legislative and jurisdictional authority	Trigger which activates next level
INCIDENT COMMAND SYSTEM (ICS) / **INCIDENT MANAGEMENT SYSTEM (IMS)**	I	Single agency response	Vertical	Vertical decision making and management of *own resources*	Command	Support required from other disciplines in the jurisdiction to manage the *situation* effectively
	II	Multi-agency response operations	Spans across agency commands	Control of a *situation* involving multi-agency operations	Control	Normal internal agency capability and resource capacity depleted; procurement and deployment of additional resources required to deal with the situation effectively
	III	Multiple inter-agency response operations	Spans across multiple control entities	Coordinated procurement and deployment of resources	Coordination	Magnitude exceeds available capability and resources; spans across jurisdictional and/or legislative boundaries
	IV	Multiple jurisdictional response operations	Spans across jurisdictional boundaries	Executive decision making and authority for management of response	Direction	Engagement of resources from outside jurisdictional boundaries; additional powers invoked to deal effectively with the situation

Table 2.3: Table illustrating interface between incident command and incident management systems

2.4 CONCLUSION

This chapter has established the theoretical framework for this study. It highlighted the importance of incident command systems as the foundation on which incident management is based and described the integral relationship between the key constructs of response management. It examined the origins of incident management internationally, the development of which was influenced by the need for managing multi-agency responses.

Key common characteristics emerged clearly, providing indicators that needed further investigation.

It emerged that an incident management system provides a generic template which facilitates integrated response operations involving agencies from diverse sectors; defines clear lines of authority to ensure efficient decision making; promotes the concept of joint decision making; ensures the coordinated procurement and deployment of resources; facilitates the natural escalation of levels of response by predetermined triggers; promotes effective communication flow; and introduces the use of standard terminology which ensures common understanding.

The following chapter will present a review of the regulatory and statutory environment in which incident management resorts in South Africa.

CHAPTER 3

THE REGULATORY AND STATUTORY FRAMEWORK OF THE INCIDENT MANAGEMENT ENVIRONMENT IN SOUTH AFRICA

3.1 INTRODUCTION

In the previous chapter the theoretical constructs of incident management and its origins in the international arena were explored.

One of the key issues which emerged was the fact that emergency response involves a wide range of role-players from various disciplines, sectors and spheres of government as well as community members, volunteers and the private sector (refer section 2.2.2). However during the research process it became evident that the scope of practice and the execution of the powers and duties vested in the various response agencies are governed by statutory authority and the competencies of the various spheres of government in which they resort (4.5.1.1). It was also revealed that the scope of authority is clearly linked to the levels of management (refer to Tables 2.2 and 3.1).

This chapter aims to establish the scope of authority vested in the various response agencies and in the various spheres of government in the context of this dissertation.

In addition it aims to establish the current status of incident management in South Africa by examining the regulatory and statutory framework of the environment in which incident management resorts in South Africa in order to establish the extent to which incident management is currently practised in South Africa.

The first section of this chapter will individually examine significant applicable statutes and regulations governing or influencing the urgent response environment

in South Africa. The focus will be to review the legislative provisions governing the operations of the key disciplines involved in urgent response in South Africa, in order to establish the existing scope of authority in the context of incident management and the extent to which its application is legislated and/or regulated. Finally, the imperatives and implications of disaster management legislation and policy in this regard will be explored.

3.2 THE CONSTITUTION OF THE REPUBLIC OF SOUTH AFRICA

Government in South Africa is constituted in three spheres namely national, provincial and local government. Although each sphere has its own unique characteristics clearly there must be mutual dependence and reciprocity amongst the spheres and accordingly they are constitutionally required to cooperate with each other. Whilst they must respect the geographical and jurisdictional authority of each other they are charged with the responsibility to integrate their resources and mutually cooperate inter alia, to "secure the well-being of the people of the Republic" (South Africa,1996:21).

In this regard the Constitution of the Republic of South Africa Act 108 of 1996, calls for the promulgation of an Act of Parliament to establish the structures and mechanisms to ensure that the principles of cooperative governance are effected and to "facilitate intergovernmental relations" (South Africa,1996:21). These provisions place particular constitutional responsibility on essential and emergency services for the application of these principles when conducting joint response operations for the resolution of the effects of a calamity regardless of proportions.

In order to explore the complexities of the issue of jurisdictional responsibility in the context of response the following discussion will examine constitutional legislative competencies relative to the key role-players commonly involved in urgent response.

The Constitution cites defence and police services as national competencies (South Africa, 1996:88,89) whilst disaster management, health, road traffic and welfare are listed as functional areas of concurrent national and provincial legislative competence (South Africa, 1996:117,118).

With regard to fire fighting, municipalities have the right to administer this function providing it has been assigned in terms of provincial legislation (South Africa, 1996:118). On the other hand ambulance services and provincial roads and traffic are functional areas of exclusive provincial legislative competence whereas municipal roads and traffic can be assigned to local authorities in terms of provincial legislation (South Africa, 1996:119,120).

In terms of Section 156(4) of the Constitution, national and/or provincial government must assign the administration of any of the functions listed as national and/or provincial competencies to a municipality if that function would be best administered locally, provided that the municipality has the capacity to do so. This provision has been applied in the case of disaster management by the promulgation of national legislation in this case, the Disaster Management Act 57 of 2002. The parameters and mechanisms for such assignment are provided for in the Municipal Systems Act, Act 32 of 2000 (South Africa, 2000b:24).

Two statutes which subsequently emanated from the constitutional imperatives discussed above, were the Local Government: Municipal Structures Act 117 of 1998 and the Local Government: Municipal Systems Act 32 of 2000. Relevant aspects of these two acts will be discussed in the following sections.

3.3 THE MUNICIPAL STRUCTURES ACT

When a calamity occurs regardless of the magnitude, the first response is a local response (South Africa, 2005:19) and it is therefore appropriate for the purposes of

this study to distinguish between the types of municipalities in the sphere of local government.

The Constitution (South Africa, 1996:64) prescribes three categories of municipalities and calls for national legislation to define the various types of municipalities in each category. The three categories will be unpacked further in the following discussion on the relevant provisions of the Local Government Municipal Structures Act 117 of 1998.

The three categories of municipalities in the sphere of local government in South Africa can briefly be described as follows:

- Category A Municipality: which has been declared as a metropolitan area due to the fact that it features an aggregation of highly populated areas; intensive development and economic activities; business and industrial areas and which has "exclusive executive and legislative authority over its area" and is referred to as Metropolitan Municipalities (South Africa, 1998b:16,14).

- Category B Municipality: is a local municipality that does not meet the criteria of a metropolitan municipality. A local municipality "shares municipal and executive authority" with a category C municipality in whose area it falls (South Africa, 1998b:16,14).

- Category C Municipality: is a municipality which has been declared a district municipality and has "municipal executive and legislative authority in an area" that includes more than one category B municipality (South Africa, 1998b:16,14).

In the case of metropolitan municipalities the matter of powers and functions assigned to municipalities in terms of Section 156 of the Constitution are

straightforward. However, in the case of district and local municipalities, municipal powers and functions must be divided between the two categories and although the parameters for the division are defined, a local municipality is nevertheless not prevented from performing any of the functions assigned to district municipalities (South Africa, 1998b:56,57).

From the aforementioned it is evident that an occurrence, whether it is localised or widespread in nature, demands the response of multiple agencies, and will inevitably involve combinations of role-players from local, provincial and/or national organs of state. The variations in the assignment of powers and functions in the different spheres and amongst the different categories of government clearly have specific implications for applying joint standards of practice. This also impacts on integrating multi-agency responses in circumstances which demand a complex or widespread response involving cross boundary capabilities and resources. It is particularly evident where agencies from like disciplines are operating under the executive authority of principles from differing spheres and categories of municipalities. This view is supported by Botha (2005), Cameron (2005) and Ndalwane (2004).

In the following section the provisions to ensure the application of the principles of cooperative governance in the municipal sphere which relate to this research will be discussed.

3.4 THE MUNICIPAL SYSTEMS ACT

In this section of the discussion the responsibilities of municipalities for ensuring coordinated response to disasters which occur or are threatening to occur, will be reviewed.

In terms of the Local Government Municipal Systems Act 32 of 2000 every municipality must develop and adopt an Integrated Development Plan (IDP) for its

area and must align the plan with "and compliment the plans of other municipalities and organs of state so as to give effect to the principles of cooperative governance" (South Africa, 2000b:36).

In this regard the municipal disaster management plan is cited as a core component of the IDP (South Africa, 2000b:38). The disaster management plan of a municipality must include contingency plans which allocate specific responsibilities to the various role-players in the event of a disaster occurring or threatening to occur and for coordinating a rapid and efficient response (South Africa, 2002b:52).

These provisions place the onus on municipalities to establish mechanisms for a standard or uniform approach in the case of local multi-agency responses to occurrences of significance. There is, however, no evidence at this stage to suggest that similar requirements exist in the case of occurrences which do not fall into the category of a disaster, a threatening disaster, or a significant event (refer to section 3.4). This provision will be explored further in relation to the other spheres of government in the study of the disaster management legislation and policy in section 3.6 of this chapter.

In the next section legislation which governs key role-players involved in urgent response will be examined to establish whether there are any existing provisions which assign statutory authority or responsibility for the implementation of incident command systems or incident management systems.

3.5 STATUTORY AND REGULATORY PROVISIONS GOVERNING KEY SECTORS IN THE URGENT RESPONSE ENVIRONMENT IN SOUTH AFRICA

This section seeks to establish whether any authority for the management of multi-agency response operations is currently vested in any of the key statutory response agencies.

The statutory and regulatory provisions governing key response agencies who are vested with statutory powers and duties in the emergency response environment will be reviewed.

It should be noted that the response agencies listed below are reflected in alphabetical order and not hierarchically.

- Defence Force;
- Disaster Management;
- Emergency Medical Services;
- Fire Services;
- Police Services and Municipal Police Services; and
- Road Traffic Services.

In view of the provisions of Section 2 of the Disaster Management Act 57 of 2002 (South Africa, 2002b:10) whereby the Disaster Management Act is only applicable in the event that a disaster or threatening disaster cannot be dealt with in terms of any other national legislation; and does not apply when a state of emergency has been declared, it is appropriate to discuss national legislation applicable to the other key agencies first.

3.5.1 The South African Defence Force

The primary role of the Defence Force is to defend the Republic (South Africa, 2002a:2). However, in the case of emergencies the Defence Act 42 of 2002, (South Africa, 2002a:22) does provide for the President or the Minister to authorise the use of the services of the Defence Force in cases where life, health or property is in danger; to assist with the provision of emergency and humanitarian aid and with maintaining lifeline services. The Defence Act (South Africa, 2002a:20) requires the Chief of Defence to compile contingency plans for circumstances in which the services of the Defence Force may be required.

From the aforementioned it can therefore be concluded that in the context of this study urgent response to emergencies and disasters is not construed to be the primary role of the Defence Force but rather that of a supporting role. There is no evidence of any legislative provisions which vest any authority in the Defence Force to command civilian response operations and a reasonable conclusion is that contingency plans in this regard will include standing procedures for Defence Force operations only.

3.5.2 Emergency Medical Services

The National Health Act 61 of 2003 (South Africa, 2003a:30) vests the national Department of Health with the responsibility to "co-ordinate health and medical services during national disasters" (Section 21(2)(e)). Similarly, in terms of Section 25(2)(g) of the Health Act, provincial Health Departments must "co-ordinate health and medical services in the event of provincial disasters" (South Africa, 2003:34). In terms of the National Health Act (South Africa, 2003a:34), emergency medical services are competencies of provincial health departments. There is no reference to any legislative imperatives for the coordination of the activities or operations of other agencies during emergency medical service operations involving support agencies from other disciplines or of any requirement for the application of incident

command or incident management methodologies in respect of emergency medical service operations.

The National Health Act (South Africa, 2003a:54) calls for the establishment of a Forum for Statutory Health Professional Councils. One of its responsibilities will be to advise the Minister on the scopes of practice of the registered professions. In terms of the Medical, Dental and Supplementary Health Service Professions Amendment Act 89 of 1997, (South Africa, 1997b:4) the Health Professions Council "determines the strategic policy" for the scope of practice of the professions (Section 3(c)).

The protocols (South Africa, 2003) issued by the Professional Board for Emergency Care Personnel governing the scope of practice of Ambulance Emergency Assistant and Operational Emergency Care Orderlies are silent in respect of any references to occurrences involving multiple response agencies or the application of incident command or incident management methodologies. Bruiners (2005), confirms that there are currently no specific requirements in this regard although services implement their own standard operating protocols for coordinating on scene operations.

3.5.3 Fire Brigade Services

The Fire Brigade Service Act 99 of 1987 (South Africa, 1987:1) provides for "the establishment, maintenance, employment, co-ordination and standardisation of fire brigade services; and for matters connected therewith". The functions of the fire service in terms of the Act can be summarised as the prevention and suppression of fires to protect life and property. These functions include provisions for rescue services, emergency medical care and any other associated actions. In addition it grants extraordinary powers to the Chief Fire Officer to enable the resolution of the situation. There is no specific reference in the Act to any legislative authority

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empowering the Chief Fire Officer to exercise control or authority over any other agencies operating in support of the fire service.

According to Ismail (2005) there are neither statutory nor legislative imperatives for fire services in South Africa to implement any incident command or incident management methodologies for fire suppression operations nor has any particular standard been adopted nationally. Most of the larger services, however, do employ incident command methodologies. Mc Leod (2005) concurs with Ismail in this regard. However, in the event of a fire being the primary origin of the incident then the fire service is logically and in terms of common practice, the primary response agency with other agencies acting in support of the fire service (South Africa, 2000a:89). From the aforementioned it can be concluded that in the case of non fire related occurrences the fire service would act in support of the primary agencies responsible for rescue and emergency medical care.

3.5.4 The South African Police Service

According to the provisions of the South African Police Service Act, Act 83 of 1995 (South Africa, 1995a:3) the functions of the police service in South Africa include ensuring the safety and security of all persons and property and protecting the rights of individuals in terms of the Constitution. These responsibilities, although broadly described, embrace activities in the urgent response context. The Act does not, however, specify the generic function of incident management as a primary function of the police nor does it vest any specific authority or responsibility for the management of multi-agency response in the police service. According to Botha (2005) training is provided for police officers in the management of incidents where the primary cause is a police responsibility, however, in cases where the primary cause of the emergency is non security related, the role of the police will be that of a support service.

3.5.5 The Municipal Police Service

In terms of the South African Police Service Amendment Act 83 of 1998 (South Africa, 1998c:6), which provides a framework for the establishment of municipal police services, the function of such a service is traffic law enforcement and the prevention of crime. According to Botha (2005) the same parameters in the context of emergency response would apply to the municipal police services as those applicable to the South African Police Service except that they would be confined to the jurisdiction of the particular municipality.

3.5.6 Road Traffic Services

The powers and duties of traffic officers as prescribed in the National Road Traffic Amendment Act 21 of 1999 are silent in respect of aspects related to this study apart from routine regulation and control of traffic and the right to close public roads if circumstances necessitate it.

During the course of this research the need for the application of incident management methodology was expressed unanimously by respondents (refer to sections 4.5.1.1 and 4.5.1.2 and to Chapter 5), however, in the review of the statutes in this section, no evidence could be found to indicate that there are any statutory requirements, specific responsibility or authority vested in any of the key role-players involved in emergency response for the overall management of multi-agency responses or for the development and implementation of incident management methodologies or systems.

The next section will further explore the South African environment by reviewing initiatives taken and recommendations already made regarding the assignment of responsibilities for the introduction of incident management methodology nationally to establish the influence such initiatives and recommendations may have on the development of the model.

3.5.7 Recommendations and initiatives undertaken to introduce Incident Management methodology in South Africa

This section will firstly consider the recommendations in respect of incident management made in the report of the Department of Water Affairs and Forestry (South Africa, 2000a) followed a review of a standard published by the South African Bureau of Standards (SABS, 2002).

3.5.7.1 Report on the review of the veldfires in the Western Cape during 15-25 January 2000

Recommendation 10 of the report of the Department of Water Affairs and Forestry (South Africa, 2000a:79) calls for the introduction of a uniform minimum standard to be set for the training of relevant agencies involved in the management of veldfires. Recommendations 13 and 14 (South Africa 2000:80) call for regulations to be published to "...establish a standard..." for the management of incidents and disasters based on incident and disaster management systems implemented in the United States and Australia. The report recommends that the regulations be published under disaster management legislation and for the inclusion of the standard in the National Qualifications Framework (as contemplated in the South African Qualifications Authority Act 58 of 1995).

The report (South Africa, 2000a:81) further recommends that the concept of agencies and authorities concluding formal mutual assistance agreements in support of each other, especially in the event of cross boundary operations, be investigated further and that a prescribed format be formulated which is applicable to all mutual assistance agreements and that agreements be formally concluded as an integral part of contingency planning for incorporation into disaster management plans (refer to section 5.3.2). The report argues that the procedures laid down in

such agreements have a significant role to play in effective coordination and management of response operations.

Recommendation 42 of the report (South Africa 2000a:89) calls for rules for the escalation of veldfire incidents to be established.

In summary the aforementioned recommendations support the need identified by respondents for the implementation of a standard system as well as the theory that the design of a system must allow for the escalation of the span of management and decision making as resource demand grows. It must be established in terms of the disaster management policy and legislation and incorporated into contingency planning (refer to section South Africa, 2005:4.2.2 and to sections 3.6.1.3, 5.2.6, 5.2.29 and 5.2.30).

3.5.7.2 Disaster Management: All-risk emergency operation planning standard

In 2002 the South African Bureau of Standards approved a standard for a Code of Practice for Disaster Management, of which Part 2 deals with "All-risk emergency operation planning" (SABS, 2002).

The standard deals with management aspects of "critical emergency functions" and according to the acknowledgement and bibliography is based on the Federal Emergency Management Agency Guide for All-Hazard Emergency Operations Planning (1996). The standard covers key aspects of incident command and incident management methodologies and takes into account relevant provisions of the then Disaster Management Bill, 2000. There is no legislative provision in the standard relating to its enforcement and in the literature review and research conducted in the field for this study no evidence emerged that this standard has been formally adopted by any response agency which purports to the need for regulations in order to ensure the successful application of a standard.

3.5.7.3 N2 Incident Management System

The South African National Roads Agency introduced a national incident management system for the N2. According to Kannemeyer (2005) there are no legal obligations for such a system. However, the initiative to introduce the system was to improve service delivery; and to coordinate incidents occurring on the N2 road network; but primarily to improve spatially related data collection to contribute to improved road engineering.

According to Paulsen (2005), the N2 Incident Management System appears to have met with varying levels of success which again purports to the need for regulatory measures.

Having explored the current status in respect of initiatives already undertaken to establish an incident management system in South Africa in this section and the possible influences on the implementation of a system, the next section will consider the legal imperatives and implications of the Disaster Management Act 57 of 2002 and the National Disaster Management Policy Framework (South Africa, 2005).

3.6 DISASTER MANAGEMENT LEGISLATION AND POLICY

As indicated in section 3.4 of this chapter, the provisions of disaster management legislation and policy will be explored further in this section to establish the implications in the context of this study.

3.6.1 The Disaster Management Act 57 of 2002

The first part of this section explores the provisions of the Disaster Management Act 57 of 2002 (South Africa, 2002b:14), that are applicable in the development of the model. This is followed by a review of key constituents of the National Disaster

Management Framework No. 27534 of 2005 which establishes the policy to guide the implementation of disaster management in the country and which are relevant to this study.

3.6.1.1 Applicable provisions of the Disaster Management Act

In Chapter 2 of this study, integrated and coordinated operations emerged as foundation elements of response management methodology. This premise is reinforced in the provisions of the Disaster Management Act (South Africa, 2002b:2), which provides for "an integrated and co-ordinated disaster management policy which focuses on preventing or reducing the risk of disasters, mitigating the severity of disasters, emergency preparedness, rapid and effective response to disasters and post disaster recovery". Section 7(2)(c)(iii) explicitly requires the application of joint standards of practice.

3.6.1.2 Responsibility for the implementation of the Disaster Management Act in the three spheres of government in South Africa

Mechanisms for the execution of the policy are clearly defined in the Act which firstly requires the establishment of a National Disaster Management Centre (Section 8) and for the appointment, by the Minister, of a Head of the National Centre (Section 10) who is charged with the execution of the legislation and policy and who is responsible for the making of all the decisions of the centre and the execution thereof (South Africa, 2002b:Section 12).

Similarly each province (South Africa, 2002b:Section 29), every metropolitan (category A) municipality and every district (category C) municipality (South Africa, 2002b: Section 43) must establish a disaster management centre for its area. The Member of the Executive Council (MEC) responsible for disaster management in each province (South Africa, 2002b:Section 31) must appoint the Head of the

Provincial Centre. The Council of each relevant municipality (South Africa, 2002b:Section 45) must appoint the Head of the Municipal Centre.

The head of each provincial and municipal centre is responsible for executing the powers and duties of the relevant centre and for all decision making in the execution of the requirements of the Act (South Africa, 2002b:Sections 31and 45).

The link between the establishment of disaster management centres, and the powers and duties at the three spheres of government and the third and fourth levels of response which emerged from the research conducted in Chapter 2 of this study will be explored further in the following sections.

3.6.1.3 Planning

One of the key areas of responsibility of the centre is planning, and in this regard the responsibility is vested in the head of the relevant centre to facilitate and monitor the development and implementation of disaster management plans (South Africa, 2002b:Sections 19;38;52;53); by all national, provincial and municipal organs of state and other municipal entities for their functional area (South Africa, 2002b:26;38;52). Similarly every municipality within the relevant municipal disaster management framework must prepare and implement a disaster management plan for its jurisdiction.

The relevant disaster management plans must include contingency plans and strategies for dealing with known priority threats. In this regard contingency plans must include emergency protocols which will ensure rapid and effective response and which are holistic and integrated with the plans and procedures of the other stakeholders (South Africa, 2002b:28,38 and 52).

Section 2 of the study highlighted the importance of the application of the response management methodology for the achievement of integration and coordination. The

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focus on holistic, coordinated and integrated response planning and operations discussed in this section relate critically to the key constructs of response management methodology discussed in this study so far. This refers particularly to the span of management and the scope of authority vested in the Head of the Centre in the various spheres and to ensure that response management methodology is incorporated in the contingency plans and emergency procedures of the various sectors and disciplines involved in response and also to monitor that it is diligently applied.

3.6.1.4 Decision making and direction in the event of a disaster

In the case of significant events occurring or threatening to occur within the jurisdiction of a centre, the head of the centre must first assess the magnitude and impact of the occurrence to establish whether it falls within the classification of a disaster (South Africa, 2002b:23) and if so, the head of the relevant centre is "primarily responsible for the co-ordination and management" of the disaster (South Africa, 2002b:28,40,54). If the magnitude of the disaster is such that the existing contingencies, in terms of capability, resources and jurisdictional authority, are inadequate then the head of the centre is empowered to recommend the declaration of a state of disaster which will enable the head of the centre to invoke extraordinary powers in order to deal effectively with the disaster (South Africa, 2002b:28,40,54).

The aforementioned powers and duties for the classification and declaration of states of disaster refer to heads of disaster management centres at each of the three spheres of government (as described in section 3.3 of this dissertation). This clearly reflects a direct link between the municipal disaster management centre and the scope of authority and decision making powers required for managing the third and fourth levels of response management. In addition the powers and duties vested in the heads of provincial disaster management centres and the national

disaster management centre in this regard indicate the emergence of a fifth and sixth level of response management.

Specific policy requirements in the National Disaster Management Framework relating to the management of response will be examined in the next section.

3.6.2 The National Disaster Management Policy Framework

The National Disaster Management Framework (South Africa, 2005) provides clear policy guidelines for the establishment of integrated institutional arrangements for the purposes of disaster response and recovery planning and operations (South Africa, 2005: Chapter 1).

In this regard the framework (South Africa, 2005: Sections 1.1.3, 1.1.3.3 and 1.2.3) prescribes that the heads of centres must: identify all relevant sectors and disciplines involved in contingencies and operational activities associated with disaster response; establish multi-sectoral project teams comprising the relevant sectors identified for each specific threat identified in the disaster risk assessment for the jurisdiction; identify and task a specific sector with primary responsibility to facilitate the development by the project team and the implementation of integrated contingency plans; and identify and task those sectors with support responsibilities.

Similarly, the heads of the centres must: identify agencies that have responsibilities in their functional area for responding to significant events and disasters; establish a multi-disciplinary project team for each of the operational activities relevant to disaster response; identify primary and support agencies; and assign responsibilities for the development and implementation of operational plans and emergency procedures for responding to significant events and disasters (South Africa, 2005: Sections 1.1.3, 1.1.3.3 and 1.2.3).

The framework emphasises that all planning and implementation must take the application of the principles of cooperative governance into account (South Africa, 2005:Section 7(2)(d)) and on establishing partnerships, enter into mutual assistance agreements and facilitate joint standards of practice.

Although in terms of Section 2 of the Disaster Management Act (South Africa, 2002b:10), the provisions of the Act are only applicable in the event of an occurrence which falls within the definition of a disaster and which cannot be dealt with effectively in terms of any other national legislation. The research in Chapter 2 has shown that the response to significant events and disasters cannot be instituted as a separate activity, but is a continuation of response to routine day to day responses, growing as the magnitude of the occurrence increases.

However, from the provisions discussed in this section of the chapter it is clear that it would be extremely difficult for the head of the centre to exercise the aforementioned responsibilities and to make informed decisions without reliable information; established procedures and mechanisms for information sharing; reporting; and communication. These are all foundation elements of the response management methodologies highlighted in the study so far and which are supported in the findings of the field study in the next chapter.

This is particularly relevant in respect of accessing resources which link directly to the third, fourth, fifth and sixth levels of response management whereby the National Disaster Management Framework (2005:Section 4.2.2) provides clear parameters enabling the head of the centre to trigger higher levels of decision making and scope of authority for accessing the necessary resources. These arguments strongly reinforce the development of a system which caters for all the levels of response management to be applied nationally and for central situation reporting and communication.

These implications are validated by the requirement in the National Disaster Management Framework (2005:Section 4.2.2) for the National Disaster Management Centre to develop and implement regulations for a national standard multi-agency response management system, thus bringing into effect the recommendations of the report of the Department of Water Affairs and Forestry highlighted in section 3.5.7.1 of this chapter.

Having reviewed the relevant aspects of the disaster management legislation and policy in this section and having identified the fifth and sixth levels of response management which are inextricably linked to the same key characteristics which emerged from Chapter 2, Table 2.1 showing four levels of response management has been expanded in the Table 3.1 overleaf to illustrate how levels five and six evolve from the first four levels.

The key constructs reflected in the table will provide the foundational blocks of six levels of response management in the development of the model.

Type of system	Level of response	Nature of Response	Span of management	Scope of authority	Term applied to level of legislative and jurisdictional authority	Trigger which activates next level
INCIDENT COMMAND SYSTEM (ICS)	I	Single agency response	Vertical	Vertical decision making and management of *own resources*	Command	Support required from other disciplines in the jurisdiction to manage the *situation* effectively
	II	Multi -agency response operations	Spans across agency commands	Control of a *situation* involving multi-agency operations	Control	Normal internal agency capability and resource capacity depleted; procurement and deployment of additional resources required to deal with the situation effectively
INCIDENT MANAGEMENT SYSTEM (IMS)	III	Multiple inter- agency response operations	Spans across multiple control entities	Coordinated procurement and deployment of resources	Coordination	Magnitude exceeds available capability and resources; spans across jurisdictional and/or legislative boundaries
	IV	Multiple jurisdictional response operations constituting a local disaster	Spans across jurisdictional boundaries	Executive decision making; statutory authority for coordination and management of response; and invoking extraordinary powers	Direction	Engagement of resources from outside jurisdictional boundaries; additional powers invoked to deal effectively with the situation
	V	Multiple jurisdictional response operations constituting a provincial disaster	Spans across jurisdictional boundaries	Executive decision making; statutory authority for coordination and management of response; and invoking extraordinary powers	Direction	Engagement of resources from outside jurisdictional boundaries; additional powers invoked to deal effectively with the situation
	VI	Multiple jurisdictional response operations constituting a national disaster	Spans across jurisdictional boundaries	Executive decision making; statutory authority for coordination and management of response; and invoking extraordinary powers	Direction	Engagement of resources from outside jurisdictional boundaries; additional powers invoked to deal effectively with the situation

Table 3.1 : Table summarising the key constructs constituting 6 levels of response management

3.7 CONCLUSION

In summary, the study of the provisions of the Constitution (refer to section 3.2) the Municipal Structures Act (refer to section 3.3) and the Municipal Systems Act (section 3.4) and relative sections of the disaster management legislation and policy has shown clear linkages between the levels of response management and the spheres of government and as a result two more levels of response management have emerged supporting the precept of the importance of a mechanism which enables natural escalation through all levels of response management.

Furthermore, it is apparent from the statutory and regulatory framework reviewed in this chapter and from the initiatives already undertaken that although efforts have been made to introduce incident command and incident management system methodology in South Africa, no standard or formal system has been adopted by any of the key agencies. The question is whether this can be attributed to the absence of any statutory or regulatory imperatives, which has emerged in this chapter, and whether the development of a system will address any problems currently encountered as a result. This will be exploited further in the next chapter which deals with the fieldwork and findings and which will be discussed further in Chapter six.

CHAPTER 4

TOWARDS A MODEL: FIELDWORK AND FINDINGS

4.1 INTRODUCTION

In the previous two chapters a comprehensive review was conducted of literature, statutes, policies and standards relevant to this research and from this key theoretical characteristics emerged which provided a substantial basis for comparison with the data collected through observations, conversation and interviews.

This chapter reports on the research conducted in the field and the process followed to gather the data, to analyse and sort it and then identifying the emerging core theory which influenced the design of the model in relation to its application in the South African environment.

The first section of the chapter will deal with the adopted data collection processes which consisted of both Internet, faxed and focus group interviews. A report will then be made on the measures taken to ensure validity and reliability through a quantitative study and testing against international opinion in order to test the relevance of the developed model to achieve triangulation. The last section of the chapter will deal with the findings derived from the research.

4.2 DATA COLLECTION

The data collected for this study was derived using qualitative research methods by conducting interviews via the Internet and fax with respondents randomly drawn from two existing groups of senior professionals, one group from the Western Cape and one group from the Eastern Cape, comprising a range of disciplines involved in urgent response. This was followed by two focus group interviews, one conducted in the Eastern Cape and one in

Gauteng, again drawn randomly from existing groups of senior professionals involved in the field (section 1.6.4).

Further Internet and telephonic interviews were conducted amongst discriminately sampled senior professionals in the various disciplines to establish the existence of any relevant legislation, statutes, policies or standards applicable to the implementation of response management systems (Bruiners, 2005; Ismail, 2005; Mc Leod, 2005; Paulsen, 2005; and refer to section 3.5).

A quantitative study was conducted using a summated attitude scale which allowed the researcher to test attitudes to the essential dimensions of the developed model (Welman & Kruger, 1999:155).

The following sub-sections provide explanation of the processes involved.

4.2.1 Semi-structured interviews

The methods used to conduct interviews enabled the researcher to access respondents in a relatively inexpensive manner from various parts of the country as well as internationally.

Questionnaires were circulated either by electronic mail or fax to a total of 89 individuals on the full mailing list of the two emergency services coordinating committees. Participation was entirely voluntary and respondents were free to retain their anonymity if they so preferred (refer section 1.6.4).

In order to test attitudes, opinions and experiences, prospective respondents were invited to complete a questionnaire. Questions were carefully structured based on key elements derived from the literature review and from previous research conducted by the researcher as a member of task teams appointed to conduct reviews of disasters which had occurred in South Africa (South Africa, 2000a; 2003b). Open-ended questions were also included so as not to restrict respondents.

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Each respondent was asked to answer the following questions:

i.   What is your understanding of the concept of Incident Management Systems?

ii.   How would you define Incident Management in your own words?

iii. From your experience, to what extent would you say Incident Management is currently practiced in South Africa?

iv.   From your experience are there:

    a.   standard procedures for the *routine* establishment of an Incident Command Post at the scene of every incident and if so, are the procedures common to all response agencies nationally?

    b.   clear uniform guidelines setting out the criteria for the establishment of a Joint Operations Centre and if so, are they applicable to all response agencies nationally? If not, should there be?

    c.   clear guidelines regarding the allocation of responsibilities for management of incidents? If not, should there be?

    d.   standard procedures for the reporting of major incidents to a central reporting centre which apply nationally? If not, should there be?

    e.   standard procedures for the reporting of multiple incidents to a central reporting centre which apply nationally? If not should there be and why?

v.   From your experience of major incidents in which you have been involved, how has the absence or presence of the standards described in 4 above affected the management of the incident either positively and/or negatively?

vi.   Is there a difference between Incident Management and Incident Command? Please elaborate on your answer.

vii. Should a single agency be identified which will always 'take charge' at all incidents?

    a. If so which agency should this be? Please motivate your response.

    b. If not, how should responsibility for Incident Command be allocated?

viii. Should Incident Commanders receive dedicated training?

ix. Please list the role-players currently involved in the management of incidents in your area

x. In your opinion, who are the role-players who *should* be involved in the management of incidents?

xi. Is there any relationship between Incident Management and Disaster Management? Please elaborate on your answer.

xii. From your understanding/experience at what stage does an incident 'become' a disaster?

xiii. Are there any guidelines of formal mechanisms in place to assist in making the differentiation between what constitutes an incident as opposed to a disaster? If there are, please elaborate on your answer, if not should there be guidelines and could you suggest an example?

xiv. Are there different levels of Incident Management? If so, please name and describe them briefly.

xv. To the best of your knowledge, are there any uniform guidelines laid down which provide for different levels of incident management in South Africa

xvi. From your experience what would you say are the greatest problems encountered in the management of incidents on a daily basis?

xvii. From your experience would you say that there is a need for a national standard Incident Management System for South Africa? If so why? If not, why not?

xviii. In your opinion what would be the most important components of such an Incident Management System?

xix. Is there a particular existing Incident Management System that you are familiar with which you would recommend for South Africa? If so please name/describe it.

xx.   Would it be practical to introduce a national standard Incident Management System in South Africa? Please qualify your answer.

xxi.   Are you of the opinion that the relevant agencies would accept such a system and implement it diligently?

xxii.   Would it be necessary to legislate a national system and if so why? If not, why not?

xxiii.   In your opinion would there be resistance to the introduction of an IMS and if so what would the main reasons be?

xxiv.   Which agency do you believe should take the lead in the development of a system for Incident Management for South Africa and why?

xxv.   Who should monitor the application of the system if such a system were to be introduced?

xxvi.   Should Incident Management be a compulsory module in the basic curricula of all the relevant sectors and disciplines?

xxvii.   Please feel free to discuss any additional aspects or express your opinion on any other issues around incident management.

The data was then collated by firstly tagging respondents' replies with their initials and then clustering them under the relevant question (Strauss & Corbin, 1990:74-95; also refer to Annexure A).

The results of these initial interviews enabled the refinement of the agenda used subsequently in the focus group interviews which will be reported on in the next section and which in turn resulted in a much more focused discussion of key elements of the topic.

4.2.2 Focus Group Interviews

The use of the focus group method is ideally suited to interviewing professionals who are highly experienced in the field of the topic being researched (Welman & Kruger 1999:197) because of their ability to express themselves well. The interview commences with the researcher setting the ground rules for conduct during the interview. Respondents are invited to introduce themselves and relate their experience of the topic. Open

discussion follows with the researcher facilitating by interjecting with probing questions until saturation is reached. The interview concludes with each respondent being given the opportunity to make a closing statement (Welman & Kruger, 1999:198).

According to Welman and Kruger (1999:197–198), focus group interviews are particularly appropriate for data collection when grounded theory research methodology is being used because it enables spontaneous participation and interaction amongst respondents.

The advantage of the focus group interviews in this research was that it enabled the use of a much more refined questionnaire, thus allowing the respondents to discuss the topics more freely (Welman & Kruger, 1999:197). This enabled the researcher to use her expertise in the field to probe and exploit the interviewing opportunity to gain insight into the actual experiences, and opinions of professionals who represent a wide spectrum of disciplines and who are directly involved in the field.

At the start of the interview participants were invited to introduce themselves. The researcher provided an explanation of the concept of a focus group interview and briefly explained the methodology in relation to grounded theory. The value of using the phenomenological method of data collection in this particular study was highlighted as was the fact that it needed expert input. Participants were advised that the session would be videotaped and recorded and were given the assurance that participation was voluntary; that anyone was free to withdraw at any stage; that everyone was welcome to talk freely; no opinion was right or wrong and that reaching consensus was not a requisite but that the aim was to generate discussion on the topic (Welman & Kruger, 1999:198).

Each respondent was invited to complete a form indicating their name, position or rank, the discipline in which they serve or their area of expertise, their contact details, and an indication of whether they had any objection to being used as a reference in the research.

In accordance with accepted standards the duration of the interviews ranged between one hour fifteen minutes and one hour thirty minutes (Krueger, 1998).

The following questions were used to introduce the discussions with the object of adding value to the data already collected in the literature review and in the responses to the Internet and faxed interviews; to gain more insight into the key theoretical characteristics which had already emerged in the research so far; and to obtain saturation on relevant topics.

i. What is your understanding of incident management – how would you describe it?

ii. What is your understanding of incident command – how would you describe it?

iii. Is there any difference between an incident management system and an incident command system?

iv. In your opinion what are the key elements/features of an incident command system?

v. In your opinion what are the key elements/features of an incident management system?

vi. How does incident command and incident management relate or impact on disaster management?

vii. Who is involved in Incident Command? Make a quick list of the various role-players.

viii. Are there different role-players involved in incident command, to those involved in incident management

ix. Are there problems in the application of these concepts in South Africa?

x. If so, what are the main issues creating the problem?

xi. If not what are the factors which are making it successful?

xii. What are the key issues that would need to be addressed when developing an incident management system?

xiii.	How should it be applied in the various spheres of government
xiv.	Should a standard Incident Management System be developed for South Africa?
xv.	How would you benefit from the introduction of an Incident Management System?
xvi.	Who should be the lead agent to develop an Incident Management System for South Africa?
xvii.	How should the application of an Incident Management System be enforced?
xviii.	From our discussions, what do you consider to be the most important element of successful Incident Management?

The proceedings of each interview were transcribed ad verbatim and each comment tagged with the initials of the relevant respondent.

Once all of the data had been transcribed and collated the process of sorting and clustering commenced (Tesch (1990: 142-145). The process adopted is described in the next section.

4.3 MEASURES TAKEN TO ENSURE VALIDITY, RELIABILITY AND TRUSTWORTHINESS

The developed model was circulated to discriminately selected national and international individuals involved in response management for scrutiny in order to establish the relevance of the model.

A five point summated or Lickert attitude scale (Welman & Kruger, 1999:155) was used to test the relevance of the core components of the model (refer to Annexure B). In the survey respondents were invited to indicate on the scale the degree to which they agreed or disagreed with the statements made in the scale.

4.4 DATA ANALYSIS

The techniques described by Strauss and Corbin (1990:75–95) and Tesch (1990:142-145) were used to analyse the data. Open coding methodology was applied. The dialogue of the respondents in the focus group interviews and the written responses in the Internet and faxed interviews were analysed sentence by sentence and key phrases and words were lifted out. As the process progressed the elements were identified. Once identified and labelled the elements were then sorted by identifying similar elements, tagging them and then clustering them into concepts which at that stage appeared to be fundamental to the management of multi-agency responses. Each concept was given a generically derived name (Strauss & Corbin, 1990:65).

In order to enhance theoretical sensitivity (Strauss & Corbin, 1990:50), constant comparisons were made with the significant theoretical concepts that had emerged from the literature study to establish how the theoretical concepts applied to the real life situation experienced by the respondents. This process enabled refinement of the concepts until it was eventually possible to identify the core concepts which had emerged.

The researcher then proceeded to develop the core concepts in terms of their properties and dimensions and by means of axial coding (refer to section 4.5.1) (Strauss & Corbin, 1990:69) to further analyse the concepts into sub concepts (scoping). The dimensions of the scoped concepts were then considered in the context of the multi-agency response environment and then key characteristics of the core concepts for the management of multi-agency response were identified. In the process positive elements as well as obstacles which could influence the implementation of a response management system were identified (Strauss & Corbin, 1990:104).

Thus the method adopted ensured that the model which emerged was grounded in the research.

The figure below provides a visual summary of the process followed for data collection and analysis towards the development of the model.

LITERATURE REVIEW
- Books
- Articles
- Journals
- Newspapers
- Laws
- Policies
- Codes of Practice
- Standards
- International best practice
- South African environment

EMERGENT THEORETICAL CONCEPTS
- Levels of response
- Role-players
- Authority
- Decision making
- Resources
- Triggers
- Communication

METHODOLOGY
- Research design
- Identification of target population
- Sampling
- Techniques
- Formulation of interview questions

DATA COLLECTION: FIELDWORK
- Internet interviews
- Focus Group Interviews
- Consultation

DATA ANALYSIS (Strauss & Corbin, 1990:61)
- Open coding
- Identification of properties
- Identification of dimensions
- Dimensionalising
- Axial coding

INTERVENING CONDITIONS IDENTIFIED

5 CORE CONCEPTS DERIVED:
1. Defined levels of response
2. Defined span of management
3. Defined scope of statutory authority
4. Defined communication and reporting
5. Defined triggers for escalating levels

CONSTANT COMPARISON

TRIANGULATION

TESTING FOR:
VALIDITY
TRUSTWORTHINESS
RELIABILITY
THROUGH
COMPARISONS AND
ATTITUDE TESTING
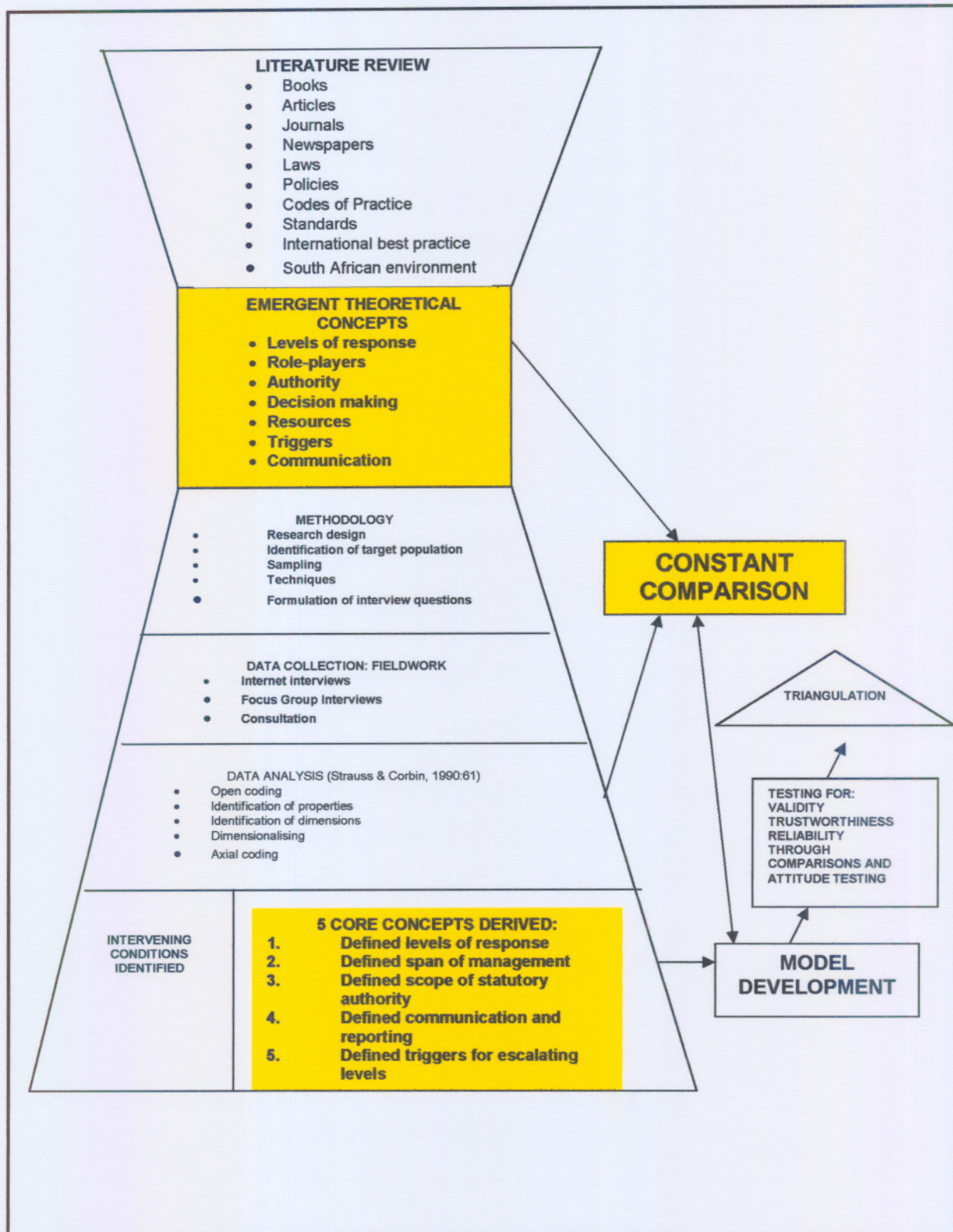
MODEL DEVELOPMENT

Figure 4.1: Data Collection, Analysis and Model Development Process

In the following section the findings of the research will be presented.

4.5 FINDINGS

The presentation of the findings will commence with a table illustrating how the emergent elements were clustered into concepts which could potentially become the core concepts on which the model is based. Thereafter each concept will be interrogated until saturation is reached and the final core concepts will be identified and described in terms of their scope and characteristics as they emerged from the research.

4.5.1 Emergent elements and concept clusters

The table overleaf illustrates how the concept clusters were derived from the emergent elements.

* People
* Planning
* Terminology
* Training

Table 4.1: Table illustrating derivation of concept clusters

EMERGENT ELEMENTS	CONCEPT CLUSTERS
• Attitude	**Concept: Roles and responsibilities**
• Boundaries	• Defined roles
• Central reporting	• Line function
• Command	• Response
• Common radio frequencies	• Role-players
• Communication	• Specific tasks
• Contingency plans	• Standard operating protocols
• Control	
• Control centre	**Concept: Management**
• Decision making	• Command
• Defined roles	• Coordination
• Disaster	• Control
• Escalation	• Start to finish
• Start to finish	• Joint Operations Centre
• Geographical area	• Leadership
• Incident	• Mechanism
• Incident command	• Monitoring
• Incident management	• Operations
• Information flow	• Overall picture
• Joint decision making	• Procedure
• Joint operations centre	• Responsibility
• Jurisdiction	• System
• Leadership	**Concept: Authority**
• Levels	• Boundaries
• Line function	• Control centre
• Links between levels	• Decision making
• Logging	• Geographical area
• Mechanism	• Joint decision making
	• Jurisdiction
• Operations	• Policy
• Overall picture	• Resources
• People	
• Planning	**Concept: Communication**
• Policy	• Central reporting
• Procedure	• Common radio frequencies
• Resources	• Information
• Response	• Logging
• Responsibility	
• Role-players	**Concept: Levels**
• Specific tasks	• Disaster
• Spheres of government	• Escalation
• Standard Operating Protocols	• Links between levels
• System	• Spheres of government
• Terminology	• System
• Training	• Triggers
• Triggers	
• Understanding	**Concept: Understanding**
	• Attitude
	• People
	• Planning
	• Terminology
	• Training

Table 4.1: Table illustrating derivation of concept clusters

The six concepts derived from the research at this stage were:

- Roles and responsibilities;
- Management;
- Authority;
- Communication;
- Levels of response; and
- Understanding.

During the analysis process it became clear that the "understanding" cluster of elements were in fact not core concepts of response management per sé but were identified as intervening conditions (Strauss & Corbin, 1990:104) which could influence the application of the model either negatively or positively. Accordingly the findings relating to those elements will be reported on in the conclusion and recommendations in Chapter 6.

Each topic will now be presented using summaries and where relevant, actual extracts from the dialogues of the respondents will also be presented. Constant comparisons will be drawn with the theoretical constructs which emerged from the literature study. This will be followed by the description of the derived core concept in terms of scope and characteristics.

4.5.1.1 Roles and responsibilities

In the literature study reported on in Chapter 2 it was theoretically shown that the need for a clear definition of roles was of particular importance. In this chapter a comparison will be drawn between the theory and the practical experience in the field (refer to section 2.2.2).

During the interviews respondents were asked to list the likely role-players who would be involved in response operations and to indicate which sphere of government they represented. The analysis of this data provided confirmation that response can involve a single agency or multiple agencies from a range

of diverse disciplines from all three spheres of government. This supported the theory that escalation was driven by growing demands for capability and resources put forward in Chapter 2 of the research (refer to Table 2.2). It also served as an indication of the range of jurisdictional and statutory authority which impacted on the development of the model and accordingly gave rise to the research reported on in Chapter 3, and subsequently linked into the factors which trigger escalation as described in the model in Chapter 5.

In the comments of the respondents the terms 'operations' and 'line function' (refer to sections 2.2.1and 5.2.2) were used to describe the statutory activities or role of an agency (Botha & Cameron, 2005). The need for pre-planning and the use of predetermined protocols was emphasised by both Smith and Hillebrand (2003).

According to Delport, (2005) the bottom line is to have contingency plans which set out clear parameters. Jordaan (2005), emphasise that each role player must know exactly what is expected of them and must be allocated specific tasks so that they do not impinge on the jurisdiction of other agencies.

Although the need for clearly defined roles emerged as a key element of response operations, this outcome emphasised that it is directly related to the *operational* activities which take place within the individual agencies involved in the first and second levels of response and falls into the scope of what is commonly referred to as 'incident command' as indicated in Table 2.3 in section 2.3.2.

There was consensus amongst the respondents that because the management of routine operations of the individual agencies was conducted within their standard operating procedures and their internal hierarchy structure, roles were clearly defined. However, the need for role definition arose as soon as more than one agency was involved in the response.

Jordaan (2005), is of the opinion that there needs to be a "...compelled policy where everyone is set out to do his specific task and not the fire guy looking

after the injured and the ambulance man trying to kill the fire." Cameron (2005) concurs with this view but adds that at each incident an individual needs to be identified who makes the decisions about the incident and who is in "control".

Sensitivity around *who* should be in control was evident in the discussions, it emerged that the sensitivity revolved primarily around the concepts of command and control linked to the lack of role definition and understanding. In this regard Machete (2004) cites the issue of personalities and attitude "...I want to be the boss and I don't want you to tell me because that is my area of expertise...". Machete is of the opinion that training and understanding is an imperative if cooperation, mutual respect and recognition of the role of other agencies are to be achieved. Mazibuko (2004) agrees, he cites the example: ".... you get this guy working for the fire department and immediately when he is on the scene he thinks he must be in charge of the traffic officer...then obviously from the word go now you have a problem because you won't have any agreement in terms of managing that scene...".

There was also evidence of the presence of a hierarchy element which concurred with the concept that emerged from section 2.2.2 of a lead or primary agency providing an initial response and then calling for the support of agencies from other related disciplines. The emergence of this concept in turn impacted on the management and statutory aspects of the envisaged model.

In terms of the hierarchy principle there was unanimity that the primary agency is the one with the legal mandate (Schroeder, 2003) to deal with the primary cause of the occurrence and therefore "takes the lead" and that the agencies from the other disciplines act in support of the primary agency (Brown & Colenutt, 2003; also refer to sections 2.2.2, 5.2.10 and 5.2.11).

However, there was strong support for the concept of joint decision making and management of the incident from the point of view of coordination in multi-agency responses (Hillebrand, 2003; Treuernicht, 2003; and Cameron,

2005) which is also evident from the discussion in section 4.5.1.2 (also refer to Chapter 3 and to section 2.2.4.4).

Moore (2005) emphasised the issue of decision making and the need for clear lines of reporting and authority. Moore, however, cautions that if the mechanism is too restrictive there is a danger of passing tactical problems to more senior levels for decisions instead of dealing with them locally. There should therefore be clear identification of roles to ensure that appropriate decisions are made at the appropriate level and identifying the location at which the decision making takes place (refer to sections 5.2.11, 5.2.12, 5.2.18, 5.2.19, 5.2.20, 5.2.21, 5.2.22, 5.2.23, 5.2.24, 5.2.25, 5.2.26, 5.2.27, 5.2.28 5.2.29, 5.2.30, 5.2.31, 5,2,13, 5.2.14 and 5.2.15).

The findings in this section reinforced the theoretical constructs which emerged in section 2.2.2 of the literature study and directly influenced the identification of the characteristics which enabled the parameters to be established for the first three levels of response management in the model.

Thus the core concept which emerged from this aspect of the research was that in the case of multi-agency responses the clear definition of roles for management and decision making are important elements and that the clear definition of reporting lines are closely linked with the concept of escalation in terms of the nature of the response; the scope of statutory powers of the individual responders and their capability and resource limits. (refer to sections 2.2.4.3, 5.2.15, 5.2.16 and 5.2.17).

In the next section, which deals with the concept of management, a clear association will emerge between role definition and the hierarchy principle discussed in this section of the report.

4.5.1.2 Management

The issue of management emerged as a significant concept throughout the analysis of the research. Key elements relating to management style used by

respondents were command, control, coordination, leadership, monitoring, responsibility and procedures.

The following excerpts from the discussions show that there was relative consensus over the span of management which the three key concepts command, control and coordination convey.

On the topic of command:"...basically it is the instructions to be given to the different role-players, managing the situation..."; "...specific discipline....on the ground..."; "...command is by one person designated for the job..."; "...during the incident taking command of the situation..."; "...command comes within incident management whereby it's more operational..."; "...in an incident has different disciplines and in terms of those particular disciplines each and every discipline has it own command system..."; "...incident command is on site..."; "...take command of the incident right where it took place...". (refer to sections 2.2.4.1and 5.2.5).

It can be seen from the following comment that the term control is linked to the management of the *incident* as opposed to the management of line function or operational personnel in the case of command:"...structured control of an incident..."; "...organised and structured control of an incident..."; "...an incident command post also known as a forward control post..."; "...basically incident management is: somebody must take control..." (refer to sections 2.2.4.2 and 5.2.6). In some cases, however, respondents used the terms command and control synonymously.

In the case of coordination respondents referred to the Joint Operations Centre (JOC) and differentiated between the on site coordination which took place during operations and the off site coordination which takes place in the JOC. There was clear evidence that coordination referred to the application of resources. Comments included: "...to coordinate and pre-plan human and equipment resources.."; "...integration of structures and resources..."; "...the coordination of resources..."; "...coordinated response and management..."; "...incident management in my opinion is the centre which manages the

incident on a higher level of representation, where an incident command is the centre located as close as possible to the accident scene and controls all activities and also has direct communication with incident management...”; ”...management by all stakeholders as applicable while command is by one person designated for the job..”; ”...coordination of all the activities and decision making from a higher level...”; ”...Metro JOC situation – there would be a representative from each of the line function – the line function would work from the JOC.....when a decision can not be made in the line function...”. (refer to sections 2.2.4.3, 5.2.6 and 5.2.20)

Moore (2005) puts forward the argument that the use of the term “control” implies giving direction over other agencies and maintains that the use of the term “command” is appropriate for single agency management but that as soon as the next level of management is reached the function becomes one of the commander of the primary agency coordinating the activities of the support agencies with that of his/her agency.

Although the theoretical interpretation of the two concepts of “command” and “control” in section 2.2.4.3 appeared sound, this is clearly not the case in practice. The sensitivity which was raised in the previous section in the discussion over the negative connotations attached to the idea that one agency could have control over another agency is reinforced by Moore's (2005) contention.

Accordingly it is appropriate to conclude that the term “command” is used to describe the span of management within individual response agencies; that the use of the term “control” impacts negatively when applied to describe the span of management when more than one agency is involved in a response; that the term “coordination” is applied to describe the span of operational and tactical management of an incident which takes place locally.

The discussion on the three terms reflected above shows linkages between the levels of response and the span of management which takes place on a particular level. It concurs with the precept that the span of command is

applied vertically in a single agency whereas span of coordination is applied horizontally. Coordination on the other hand is applied horizontally, to manage the tactical application of resources during operations in the actual *situation*, and that coordination also applies to a higher level of resource management which involves joint operations and that coordination can take place both on and off site (Cameron,2005; Jordaan, 2005; and Mostert, 2004). This view was supported by Cameron, 2005; Brown, 2003; and Barnard 2004. This particular aspect of the research led to the conceptualisation of the location at which the span of management is executed at the first three levels in the model (refer to sections 2.2.4.2, 2.3.1, 5.2.12, 5.2.19 and 5.20).

The key elements of the terms derived from the literature study in section 2.2.4 and from this discussion were used to reach the generic definitions of terms which emerged as foundational elements which enabled the delineation of the span of management attributed to the various levels of response in the development of the model.

Thus the scope and characteristics of the key concept of management derived from this part of the study are that firstly, levels of management are differentiated in terms of the scope of authority vested in an individual and secondly, that differentiation between the spans of management is defined directionally.

The inter-linkages which were identified between the concepts of management and authority will be explored in the next section.

4.5.1.3 Authority

As discussed in sections 4.4.1.1 and 4.1.1.2 of this chapter the management of a single agency response does not represent any difficulties due to the fact that the agencies which were identified as being the key response agencies all operate according to the statutory powers vested in them in terms of decision making, authority or jurisdictional boundaries for managing the routine operational activities of each discipline or sector. The problem which

does arise, as identified by the respondents, is in situations where agencies from diverse disciplines have to work together for the resolution of a situation.

As discussed the problems raised during the discussions were attitude and personalities relating to the threat of one agency exercising authority over another and therefore there needed to be clear guidelines set out in plans and policies and a formal response system (Ndwalane, 2004; Machete, 2004; Mazibuko, 2004; and Mostert, 2004).

A key factor which was identified by respondents was a mechanism that would bridge the apparent gap which prevailed in recognising the need for higher levels of decision making and then triggering the transition from the management of a significant event or events to that of a disaster when the engagement of extraordinary measures in terms of the levels of decision making, scope of authority and powers are necessary (Botha, 2005; Mokoto, 2004 and Mazibuko, 2004; also refer to section 5.2.4).

In this regard the issue of different jurisdictional boundaries was raised as a problem – the example given was that the boundaries for police jurisdictions are not the same as the demarcated boundaries of a local authority (Botha, 2005). According to Ndwalane, (2004); Mazibuko, (2004); Mostert, (2004); Botha, (2005) and Cameron (2005), a response management system is necessary to enable the identification of indicators that the situation was escalating to the proportions of a disaster and how that reporting should take place. The concept of central reporting of certain levels of incidents to enable the expansion of management and decision making to higher levels of authority and for direction was put forward as a key concept, particularly when it came to the various spheres of government and the provisions of the Disaster Management Act (South Africa, 2002b; Brown, 2003; Mc Carthy, 2003; Schroeder 2003; Treurnicht, 2003; Botha 2005; Cameron, 2005; Ndwalane, 2004 and Myburgh, 2004; also refer to sections 3.6, 5.2.7, 5.2.22, 5.2.23, 5.2.24 and 5.2.29).

The need for clear definition of reporting lines and communication is supported by the comments of Moore (2005) reported on in section 4.5.1.3.

The experience of the respondents discussed in this section supports the theory that the clear definition of scope of authority, the allocation of responsibility for decision making at the various levels of response management, is necessary. The issue of defined mechanisms and lines for situation reporting were identified as critical for triggering higher levels of decision making and authority, particularly to enable the transition from managing an incident within the mandate of national legislation to that of managing an event within the mandate of the Disaster Management Act (South Africa, 2005 and also refer to Table 2.2 in Chapter 2, sections 3.6 and 5.2.29).

The analysis of data in this section showed that the three factors revealed above are inextricably linked in that escalation to a higher level of management depends on the limits to the span of management which is dictated by the scope of statutory authority. In addition clear reporting lines are key to ensuring that higher levels of response are triggered which justify their inclusion as core concepts of a response management system.

The issue of information sharing, reporting and communication which were identified as significant properties of response management in this section will be discussed further in the following section.

4.5.1.4 Communication

According to Botha (2005), the issue of establishing communication links which facilitate a natural flow of information sharing and situation reporting are fundamental to ensuring that the higher levels of management are triggered. Botha maintains that central reporting centres from which communication between the various agencies involved in a response operation can be monitored would contribute to better and speedier decision making, especially between the disaster management centres in the different spheres. Brown

(2003), identifies communication and reporting as two of the most important components of a response management system. This view is supported by Colenutt (2003), who cites "...simple, easy reporting type system..." as a key component. Colenutt also blames poor communications for having a negative impact on the management of responses (refer to sections 5.2.2, 5.2.21, 5.2.22, 5.2.23, 5.2.24, and 5.2.28).

There was strong support for the need for standard reporting procedures; established communication links and systems; and for central reporting (Brown, 2003; Colenutt, 2003; Mc Carthy, 2003; Krenekamp, 2003; Schroeder, 2003; Barnard, 2004; Mostert, 2004; and Mokoto, 2004).

Mehlomakulu (2004), identifies the lack of statutory requirements for a response management system which enforces central reporting and clear communication systems between disciplines as major contributing factors to conflict between disciplines (refer to section 2.3.2).

Moore (2005) emphasises the importance of two way communication and while recognising the need for vertical communication, the importance of horizontal communication and reporting for effective coordination of operations is critical.

The experience put forward by the respondents compare favourably with the discussion on the concept of communication which emerged from the literature study. Clearly communication is a core component of response management systems. It has emerged as an important link between operations, management and direction.

The analysis of the data in relation to this concept illustrates the importance of predetermined communication channels and systems for situation reporting from the operational sphere to a central reporting centre to enable informed decision making; horizontal two way communication between disciplines for operational and management purposes; and vertical two way communication for direction and information sharing.

In the analysis of the concepts already discussed, clear associations emerged between defined roles and responsibilities; the span of management; the scope of authority and decision making and the vital enabling role that communication and reporting play in the effective management of response. The linkages between these critical components of a response management system give credence to the emerging theory of escalating levels of management for multi-agency responses. In the next section the findings of the research will be analysed to test the theory of escalation against what has emerged so far and then a comparison will be drawn with that which emerged from the literature study (refer to Table 3.1 in Chapter 3 and to section 5.2.14).

4.5.1.5 Levels of response

In the comments from both the Internet, faxed and focus group interviews the interpretation of the words "incident" and "disaster" were used interchangeably by respondents. This was evident in responses to the question on the understanding of an incident management system. Responses included "...structured control of an incident..."; "...dealing with a disaster in the most effective manner..."; "...managing incidents..."; "... command and control of an incident..."; "...a pre-arranged method....in a disaster..."; "...managing an operation..."; "...procedure...to ensure an incident is handled properly..".

On the other hand when questioned as to whether there is a relationship between incident management and disaster management the responses became more focused for example "...yes, an incident could become a disaster..."; "...no, incident has potential for a disaster..."; "...differentiated generally by the scale of the problem..."; "disaster becomes an expanding incident..."; "...yes, if an incident is not managed properly, it becomes a disaster..."; "...you have a mini incident command in a single car accident and the incident command will increase or decrease depending on the size of the incident and the type of the incident..."; "...the command system can increase or decrease...": "...I think we need incident categories. You get local

incidents ....provincial and national....your decision making, your resources come to an end as the incident escalates, so that is where the coordination needs to come in with our spheres of government. It has to be guided by that...".

From the aforementioned comments it appears that the terms incident and disaster are two extremes of a concept which relate to magnitude and that there is an escalating scale between the two which relates to demands (Brown, 2003; Colenutt , 2003; and Mc Carthy, 2003) and also refer to sections 2.2.3 and 5.2.1).

This is supported to an extent by the Australian Inter-service Incident Management System (2004:25) which classifies incidents in three levels according to their complexity. A numerical tag is used to indicate a level, thus retaining a generic approach to terminology. Any occurrence of greater magnitude than a level 3 incident graduates onto the DISPLAN system for a higher level of management (South Africa, 2000a:80). Nevertheless, the concept of levels and graduation or escalation remains.

On further analysis of the interviews it emerged that the nature or level of the *response* which the situation demanded was the discriminating factor rather than the specific terminology used to define the magnitude and that the *management* of those *demands* was the real issue which dictated the *escalation* (Schroeder, 2003; Treurnicht, 2003; and Botha, 2005).

The following comments illustrate this analysis in respect of response demands and the need for escalating levels of management: "...provide for all line functions and incidents to be coordinated and each role player to have an idea of what other role-players are doing..."; "...dealing with position to manage the incident from when it originates until it is completely finished..."; "...somebody must take control..."; "...from the planning side to the end of the incident..."; "...establish those links when a bigger incident happens..."; "...your decision making – your resources come to an end as the incident escalates so that is where the coordination needs to come in with our spheres

of government. It has to be guided by that...”; ”...identify that when the incident escalates and who would be the coordinator...”; ”...when local resources can no longer deal with it...”; ”...when the incident is of such a nature that the local agency(s) resource is insufficient...”; ”...the coordination of resources...”.

These concepts concur with the results of the literature study reported on in Chapter 2 where it emerged that as an incident demands a greater level of response so the need for higher levels of management is dictated.

The interchangeable use of terms which emerged from the research was also highlighted in the literature study in section 2.2.3 of this dissertation.

This serves to support the philosophy that the application of generic terminology will contribute to eliminating misinterpretation, misunderstanding and confusion.

The analysis indicates that rather than placing the focus on specific terms to describe the escalating magnitude of an occurrence, it is preferable to refer to levels of response; that there are specific levels of response which are defined according to escalating demands for resources and the ensuing management and statutory authority requirements; and that a numerical tag can be used to differentiate between the levels of response. (refer to Tables 2.2 and 3.1 in Chapters 2 and 3 respectively).

Furthermore, the key elements for defining a level of response are the nature and scope of the response required and the limits of capabilities, resources and the scope of statutory authority and decision making which can be applied and therefore the transition to higher levels is dictated or triggered by the aforementioned factors. (refer to Tables 2.2 and 3.1 in Chapters 2 and 3 respectively and to section 5.2.28)

4.6 CONCLUSION

This chapter of the dissertation presented the fieldwork and the findings of the research. It presented an explanation of the methodology applied to collect the data which was followed by a detailed analysis of the data.

The analysis of the data brought key concepts inherent to the management of multi-agency responses to the fore. These were further interrogated in terms of their scope of application and characteristics and by the use of constant comparisons; linkages between the five concepts were identified and explored.

The findings were constantly exposed to testing against the theoretical concepts which emerged from the literature study and where relevant integrated to serve as the foundation for the development of the model.

In the following chapter the model will be presented in the first section of the chapter, which will provide concise explanations of the scope, characteristics and linkages inherent to the concepts derived from the findings which form the backbone of a multi-agency response management system, followed by a detailed presentation of the model.

CHAPTER 5

A MODEL FOR A MULTI-AGENCY RESPONSE MANAGEMENT SYSTEM

5.1 INTRODUCTION

The model which has been derived from the research conducted in this study and from the researcher's experience in the field, aims to provide a generic framework from which a comprehensive multi-agency response management system can be developed for South Africa.

The model does not strive to provide a system which addresses the intra disciplinary operating procedures of the individual response agencies, which is commonly referred to as an Incident Command System and which should clearly be the subject of a separate study, but rather focuses on the management of multi-agency responses.

In the research conducted in this study it clearly emerged that the lack of concisely defined standard reporting procedures prevents the necessary escalation to higher levels of response management. Consequently the level of coordination, integration of operations, direction and decision making demanded by events of significance are impeded. This is particularly applicable when multiple events of significance occur simultaneously which may not individually constitute a disaster, but the sum of which requires the application of extraordinary measures.

The advantage of this model therefore, is that it provides for the natural escalation of the management function from a single agency response to a routine occurrence; to a multi-agency response to a single occurrence or multi-agency responses to a series of occurrences within a single jurisdiction; as well as to multi-jurisdictional responses within a particular sphere of local

government and right up through the second sphere to national government – a problem that was identified in the report of the Department of Water Affairs and Forestry (South Africa, 2000a).

The model provides a seamless environment for integrating and coordinating operational responses; for tactical and strategic decision making; and for invoking extraordinary powers for the effective resolution of the situation and is applicable for any type of occurrence, regardless of its origin.

It has been subjected to verification amongst leading national essential and emergency response agency personnel, using quantitative attitudinal and opinion testing. In addition it has been tested against international expert opinions to ensure its trustworthiness, reliability and validity.

The model presented in this chapter is grounded in all the research conducted for this study and which has been presented in the discourse of this dissertation so far.

The most significant concept which emerged from the research was the logic to move away from linking the term 'incident' to the title of a system which is designed to provide for graduated levels of managing response across the spectrum of occurrences in respect of magnitude as opposed to response to an incident. In support of this approach was the fact that the use of the terms 'incident' and 'disaster' conveyed a 'stop, start' context which inhibited the natural escalating management concept. Consequently the use of a generic term which describes the exact purpose which a system of this nature is designed to serve was adopted and hence this model is referred to as the 'Multi-agency Response Management System" (MARMS).

The core concepts derived from the research and which are fundamental to the scope of the model will be presented at the start of the chapter. The concepts will then be expanded on by supporting explanatory text to establish the context of key characteristics inherent to response management which underpin the core concepts and which are frequently referred to in the model.

This will be followed by the presentation of the model. The model will be described in a series of progressively escalating steps, each supported by graphical figures showing the parameters for progressively escalating levels of response management, and identification of the key factors which trigger the next level of response. Finally a composite graphic will illustrate the entire model.

5.2 CORE CONCEPTS INHERENT TO THE MODEL

In this section the core concepts inherent to the model will be presented in explanatory text and will, where relevant, be supported diagrammatically.

The core concepts on which the model is based and the scope of each of the concepts which was derived from the research and which have been built into the model are:

i.   Consistency in understanding the concept and key characteristics of response management;

ii.   Clearly defined levels of response;

iii.   Clearly defined span of management for each level;

iv.   Defined scope of statutory authority for each level;

v.   Defined roles (within the context of this study);

vi.   Clearly defined communication flow; and

vii.   Defined triggers for escalating levels of response.

In order to ensure that the principle of consistency in terminology is applied in this model, generic terms based on the arguments put forward in the research have been applied. Each of the terms is described in the context of its application to this model in order to create understanding and common interpretation and to eliminate any ambiguity and confusion.

5.2.1 Incident

An incident is any expected or unexpected occurrence requiring emergency response which can be effectively resolved using local primary response capabilities and resources (refer to sections 2.2.3 and 4.5.1.5).

5.2.2 Operations

The term 'operations' refers to the application of capabilities and resources for the effective resolution of an incident (refer to sections 2.2.1 and 4.5.1.1).

5.2.3 Standard Operating Protocols (SOPs)

Standard Operating Protocols are pre-planned checklists used for response operations (in the context of this model), which provide agency personnel with the step by step actions necessary to complete a specific task effectively (refer to section 2.2.2).

5.2.4 Jurisdiction

Jurisdiction refers to the extent or scope of power vested in an authority over resources and for the performance of its function or to the area over which an authority has responsibility (refer to Chapter; and section 2.2.4.4).

5.2.5 Command

Command is the direction which takes place vertically and is confined to the operational role and tasks of a particular response agency. Command cannot be exercised by one agency over the personnel or resources of another agency unless by prior agreement (refer to sections 2.2.4.1and 4.5.1.1).
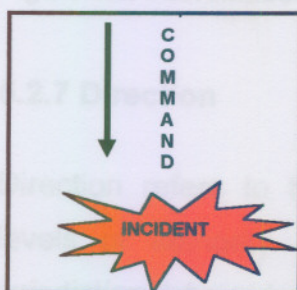

Figure 5.1: Command within a single agency

5.2.6 Coordination

Coordination refers to the systematic process whereby capabilities and resources of multiple and diverse origins are harmoniously integrated and optimally utilised to achieve a predetermined set of objectives. Coordination can take place within a single agency or can span across multiple agencies (refer to sections 2.2.4.3 and 4.5.1.2).

Coordination is applied horizontally for the management of an incident or of a combined operational activity involving multi-agency response operations which spans across agency commands. Authority for coordination is vested in the agency tasked with primary responsibility for dealing with an incident or with an operational activity involving multiple response agencies – for example search and rescue (refer to sections 2.2.4.2 and 4.5.1.2).
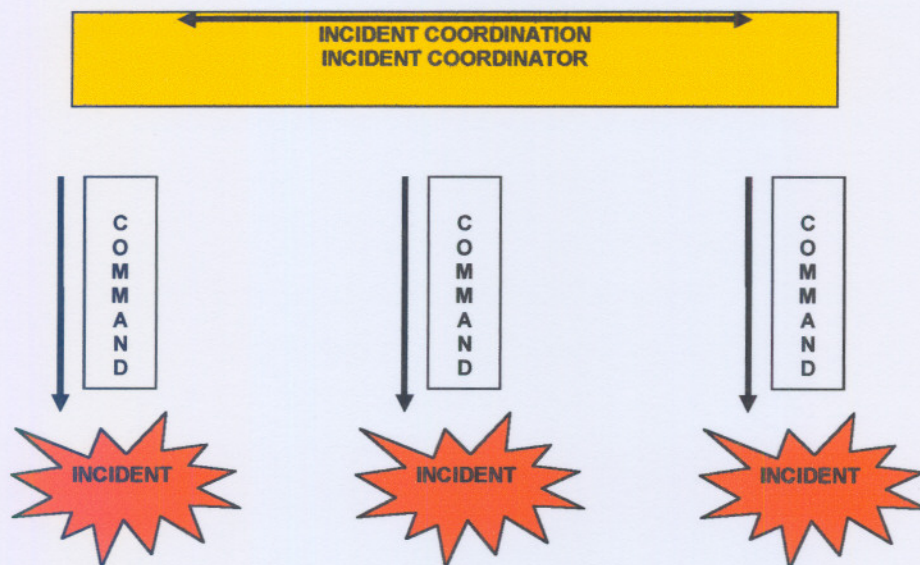

Figure 5.2: Coordination spanning across more than one agency command

5.2.7 Direction

Direction refers to the level of response management demanding higher levels of authority and executive decision making which spans across jurisdictional boundaries and thus applies to the horizontal management of response operations involving:

- a single joint operations centre or across multiple joint operations centres in the municipal sphere;

- a single municipal disaster operations centre or multiple municipal disaster operations centre in the case of a province; and similarly

- response operations involving a single provincial disaster operations centre or multiple provincial disaster operations centres in the case of the national centre (refer to sections 2.2.4.4 and 4.5.1.3).

5.2.8 Response Agency

Response agency refers to any emergency or essential service sector or discipline; non-governmental or community based organisation; or private sector organisation which has a role or responsibilities to respond to any occurrence (refer to sections 2.2.2 and 4.5.1.1).

5.2.9 Primary agency

A primary agency is the agency which has officially been assigned primary responsibility in terms of the disaster management policy and legislation and is so recorded in the contingency plan of the relevant jurisdiction. Such responsibilities include the planning, coordination and management of response operations to an occurrence of specified origin or a specific activity involving multi-agency response operations (refer to sections 2.2.2 and 4.5.1.1).

5.2.10 Support agency

A support agency is a response agency officially assigned with support responsibilities in terms of the disaster management policy and legislation. Such assignment and responsibilities are so recorded in the contingency plan of the relevant jurisdiction and apply to the provision of support operational capabilities and resources in response to an occurrence of specified origin or a specific activity involving multi-agency response operations (refer to sections 2.2.2 and 4.5.1.1).

5.2.11 Agency commander (AC)

An agency commander is the individual in whom the responsibility is vested to manage a level 1 response by exercising vertical command over the operational activities of a single response agency (refer to sections 2.3.1 and 4.5.1.2 and to Table 2.2).

5.2.12 Agency command post (ACP)

Agency command post denotes the location, usually on-site, from which the agency commander operates to manage a level 1 response (Australia, 2004:30; also refer to sections 2.3.1and 4.5.1.2 and to Table 2.2).

5.2.13 Communication

Communication is the vertical and horizontal sharing of information within the response management system via any conceivable method or system according to pre-determined protocols (refer to sections 2.3.1, 4.5.1.3 and 4.5.1.4).

5.2.14 Communication Network Plan

A communication network plan consists of a pre-planned diagrammatic representation of the mechanisms to be used for communication within the response management system. It is supported by relevant contact details, call signs and emergency radio communication frequencies and channels (Australia, 2003:100; also refer to sections 2.3.1, 4.5.1.3 and 4.5.1.4).

5.2.15 Reporting lines

A reporting line is a predetermined protocol for situation reporting and information sharing within and between the various levels of response management (Australia, 2004:38).

5.2.16 Capability

Capability denotes the scope of operational capacity or authority of a particular response agency (refer to sections 2.2.4.3 and 4.5.1.1).

5.2.17 Resources

Resources refer to all allocated and available human resources, equipment resources and organisational and financial capacities necessary for the resolution of the situation (refer to sections 2.2.4.3 and 4.5.1.1).

5.2.18 Incident Coordinator (IC)

An incident coordinator is the individual responsible for management of a level 2 response. The incident coordinator is assigned by the primary response agency and is responsible for exercising horizontal coordination over an incident which spans across individual agency commands and is also vested with the responsibility to task other response agencies according to the demands of the incident in pursuance of integrated and coordinated operations for the effective resolution of the incident (refer to sections 2.2.4.2 and 4.5.1.2 and to Table 2.2).

5.2.19 Incident Coordination Post (ICP)

Incident coordination post denotes the location from which the incident coordinator operates and manages a level 2 response. The establishment of an incident coordination post is an operational imperative immediately vested in the primary response agency once a support agency arrives on-site (Australia, 2004:30; also refer to sections 2.2.4.2 and 4.5.1.2 and Table 2.2).

5.2.20 Joint Operations Centre (JOC)

The term joint operations centre denotes the off-site location from which the JOC Coordinator operates for the management of a level 3 response. The establishment of the JOC is an operational imperative vested in the Head of

the Disaster Management Centre. The JOC is established in a fixed location which in the case of a single level 3 response operation may be close to the site. In the case of multiple level 3 response operations taking place in the same jurisdiction of a local municipality, it is located at the administrative headquarters of the local municipality. In the case of multiple level 3 response operations taking place in the jurisdiction of a metropolitan municipality, JOCs are established at fixed predetermined decentralised geographically and logistically appropriate locations (Australia, 2004:30; also refer to sections 2.3.1, 4.5.1.1 and to Table 2.2).

5.2.21 JOC Coordinator

The JOC Coordinator is the individual vested with the responsibility to manage a level 3 response. The responsibility is assigned to the JOC Coordinator by the municipality which, in terms of the disaster management policy and legislation has been assigned primary responsibility for the coordination and management of disasters which are occurring or threatening to occur in the jurisdiction of that municipality. The assignment is so recorded in the contingency plan of the relevant municipality. The JOC Coordinator is supported by assigned senior representatives of the relevant support agencies and facilitates a joint decision making process and logistical support to ensure the optimal utilisation of resources (refer to sections 2.2.4.1 and 4.5.1.2 and to Table 2.2).

5.2.22 Municipal Disaster Management Centre (MDMC)

The Municipal Disaster Management Centre is established in the administration of a metropolitan or district municipality from which all the powers and duties of the centre are executed (refer to sections 3.6, 4.5.1.3 and 4.5.1.4).

5.2.23 Provincial Disaster Management Centre (PDMC)

The Provincial Disaster Management Centre is established in the administration of a province from which all the powers and duties of the centre are executed (refer to sections 3.6, 4.5.1.3 and 4.5.1.4).

5.2.24 National Disaster Management Centre (NDMC)

The National Disaster Management Centre is established in the administration of a department in national government from which all the powers and duties of the centre are executed (refer to sections 3.6, 4.5.1.3 and 4.5.1.4).

5.2.25 Disaster Operations Centre (DOC)

The Disaster Operations Centre is a fixed physical conference type location within the disaster management centre complex of a municipal, provincial or national disaster management centre. It is the location from which level 4, 5, and 6 response operations are directed (South Africa, 2005:60).

5.2.26 Head of Disaster Management Centre

The Head of the Disaster Management Centre is the person appointed by the relevant sphere of government vested with the responsibility for the coordination and management of disasters occurring or threatening to occur in its jurisdiction in terms of the Disaster Management Act (South Africa, 2002:16, 32, 46). The Head of the Centre is responsible to exercise the powers and to perform the duties of the relevant centre and accordingly is responsible for dealing with the disaster (South Africa, 2002:6, 24, 28, 36, 40, 48, 54).

5.2.27 Disaster Direction Team (DDT)

Direction is executed by the Head of the relevant Centre who is vested with the responsibility of the exercising the powers and performance of the duties of the centre and is responsible for all the decision making of the centre. The head of the centre has the power to recommend the classification of an occurrence as a disaster and in the case where it is necessary to invoke extraordinary powers for the effective resolution of the situation he/she may recommend the declaration of a state of disaster.

The Head of the Centre is supported by key assigned senior representatives of the relevant organs of state and other key role-players who have been assigned with primary and support responsibilities for the coordination and management of a significant event or a disaster which has occurred or is threatening to occur as the result of a hazard of a specific origin. The head of the centre facilitates a joint decision making process and the logistical support necessary to ensure the optimal utilisation of resources within the jurisdiction of that sphere during level 3, 4, 5, or 6 responses (refer to sections 2.2.4, 2.4 and 3.6).

5.2.28 Central Communications Centre (CCC)

The Central Communications Centre is the physical location in a disaster management centre which serves as the conduit for all communication to and from the affected area or areas. Its functions include a monitoring and tracking capability for the identification and dissemination of early warnings. It serves as the central reporting centre to which all incidents requiring level 3, 4, 5, or 6 responses are reported and accordingly it is the mechanism through which levels 3, 4, 5 and 6 responses are activated. During real time response operations it immediately establishes and maintains direct communication links between the disaster operations centre and the joint operations centre or centres from where the level 3 response is being coordinated in the affected

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area or areas; with affected areas and communities; with areas and communities at risk; and with the disaster management centres in the other spheres (South Africa, 2005:11; also refer to sections 3.6 and 4.5.1.4).

5.2.29 Scope of statutory authority

Scope of statutory authority denotes the span of statutory power and decision making vested in an individual or a sphere of government (refer to section 2: Table 2.2 and to sections 3.6 and 4.5.1.3).

5.2.30 Trigger

A trigger is the term used for pre-identified indicators that signal the need to activate a higher level of response (refer to sections 2.2.3.2 and 2.2.4.4 4.5.1.5 and also to Table 2.2). Any of five triggers will essentially signal the escalation to the next level of response however, prevailing circumstances may immediately trigger a high level of response such as a sudden major catastrophe which requires an immediate level 4 or higher response.

The five triggers identified are:

- Equipment resources depleted;
- Human resources depleted;
- Organisational capabilities exceeded;
- Situation demands exceed jurisdictional or legislative authority; and/or
- Contingency reserve threshold exhausted.

5.2.31 Level of response

Level of response is the generic term to which a numerical tag is applied to indicate the predefined parameters or limits in terms of capability, resources and scope of authority within which a response operation can effectively be managed before a higher level or levels of management are triggered. The numerical tag is applied on an escalating scale, as illustrated in the Figure below, with a level 1 being the first level of response up to a level 6 response

which signifies an occurrence which can be classified as a national disaster (refer to Tables 2.2 and 3.1 and also refer to sections 4.5.1.5 and 2.2.3).
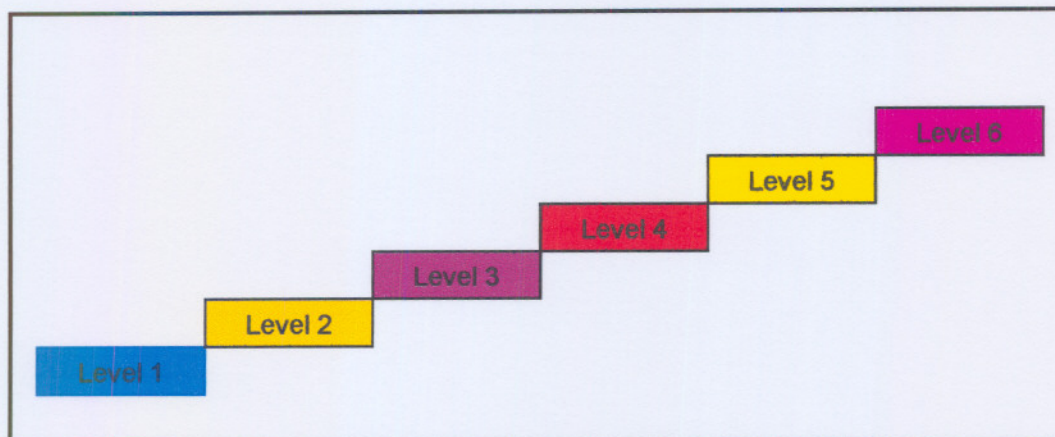

Figure 5.3: Six escalating levels of response

The concepts which have been presented in this section are building blocks which will facilitate the interpretation for the model to follow.

5.3 A MODEL FOR A MULTI-AGENCY RESPONSE MANAGEMENT SYSTEM (MARMS)

In this section the MARMS model will be presented systematically using a graduated format to illustrate six escalating levels of response management.

The six levels of response management emerged from the research conducted in Chapters 2 and 3 as summarised in Table 3.1, and were further elaborated on in section 4.5.1.5 of this dissertation.

In the model:

- Solid black arrows denote span of management and authority.
- Dotted blue arrows denote communication lines.
- Solid orange arrows denote situation reporting lines.
- Solid red lines denote jurisdictional resource/capability/authority limits approaching/reached.

- Dotted red arrows denote triggers signalling the escalation the next level of response.
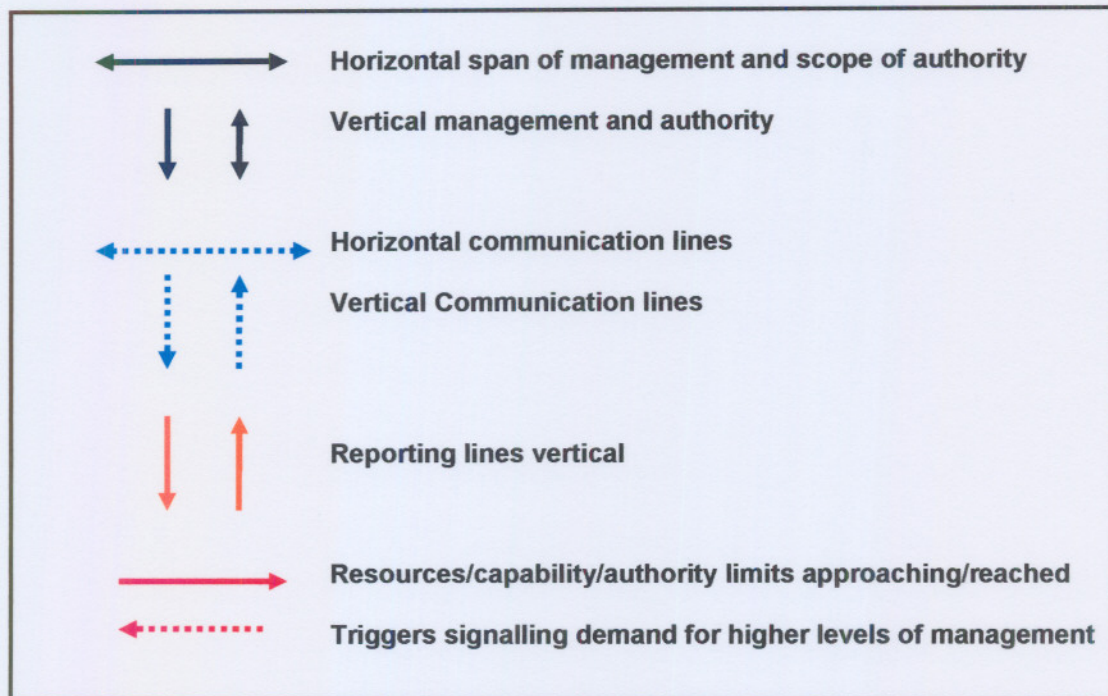

Figure 5.4: Key to Figures in the model

5.3.1 MARMS: Level 1 Response

A level 1 response constitutes the response to an incident involving a single agency which has statutory responsibility to deal with the primary effects of the incident (refer to Table 2.2 and to sections 4.5.1.1, 4.5.1.2, 4.5.1.3, 4.5.1.5, 5.2.1, 5.2.9, 5.2.29, 5.2.30 and 5.2.32).

5.3.1.1 Span of management and scope of authority

The scope of management applied in a level 1 response is that of vertical command and decision making, exercised by the Agency Commander over own agency resources from an Agency Command Post (ACP) (refer to sections 4.5.1.1, 4.5.1.2, 4.5.1.3, 5.2.5 and 5.2.12).
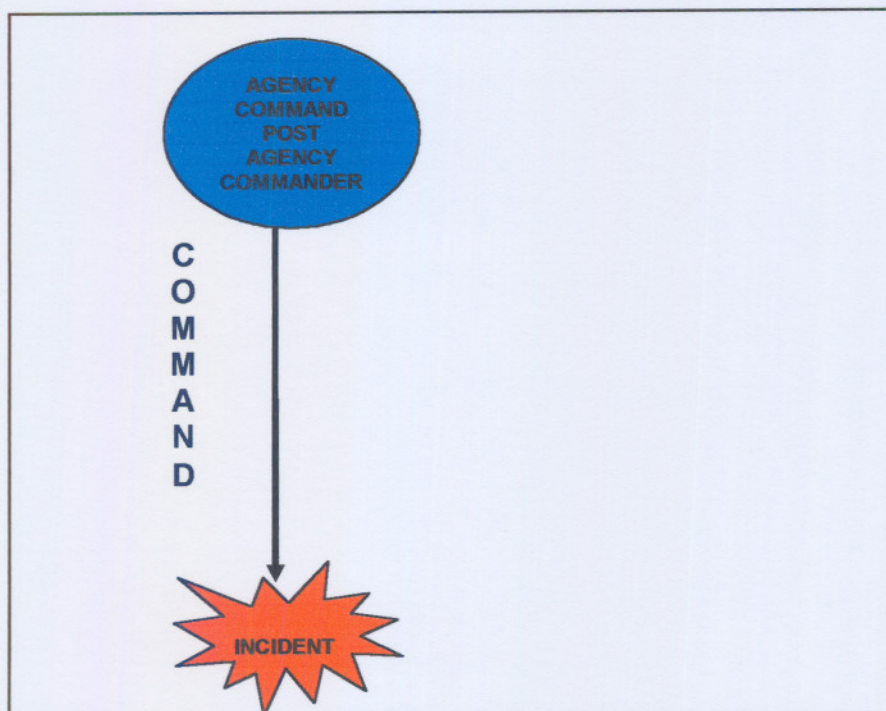
Figure 5.5: Span of Management Level 1 Response

5.3.1.2 Communication

A level 1 response involves two way vertical communication between the agency commander and agency personnel on-site; horizontal communication between agency personnel in the execution of their duties; and two way vertical communication between the agency commander and the agency headquarters (refer to sections 4.5.1.4, 5.2.14 and 5.2.15).

5.3.1.3 Reporting

Reporting is executed in terms of internal agency operating protocols (refer to sections 4.5.1.4, 5.2.3 and 5.12.16).

5.3.1.4 Triggers for escalating to a level 2 response

Immediately the incident demands support from allied agencies with which the primary agency has concluded mutual assistance agreements; or support services from other disciplines operating within the jurisdiction to manage the

situation effectively, then the Agency Commander activates a level 2 response (refer to Table 2.2 and to sections 4.5.1.4 and 5.2.31).
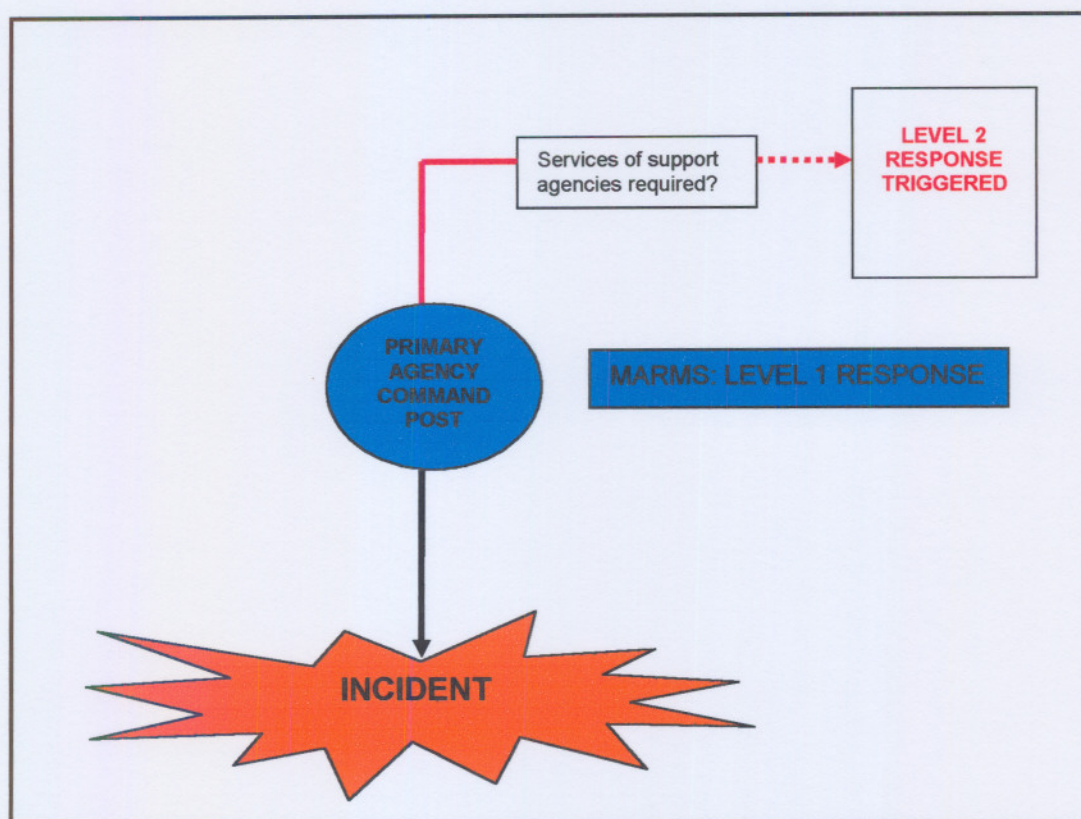
Figure 5.6: Level 2 Response Activation

5.3.2 MARMS: Level 2 Response

A level 2 response applies to an incident demanding the response of:

- the primary agency which has statutory responsibility to deal with the primary effects of the incident; and
- support agencies from other disciplines within the same jurisdiction which have statutory responsibility to deal with the secondary effects of the incident (refer to Table 2.2 and to sections 4.5.1.1, 4.5.1.2, 4.5.1.3, 4.5.1.5, 5.2.1, 5.2.9, 5.2.11, 5.2.29, 5.2.30 and 5.2.31).

A level 2 response may also involve support agencies from the same discipline as the primary agency with which the primary agency has concluded mutual assistance agreements (refer to section 4.5.1.1).

5.3.2.1 Span of management and scope of authority

The span of management applied in a level 2 response is that of horizontal coordination and decision making exercised by the Incident Coordinator (IC) who establishes an Incident Coordination Post (ICP) from which the overall management of the situation takes place, spanning across all the agency commands involved in the response operation without impinging on the authority exercised by the individual agency commanders in the management of their own agency operations (refer to sections 4.5.1.1, 4.5.1.2, 4.5.1.3, 5.2.6, 5.2.18 and 5.2.19).

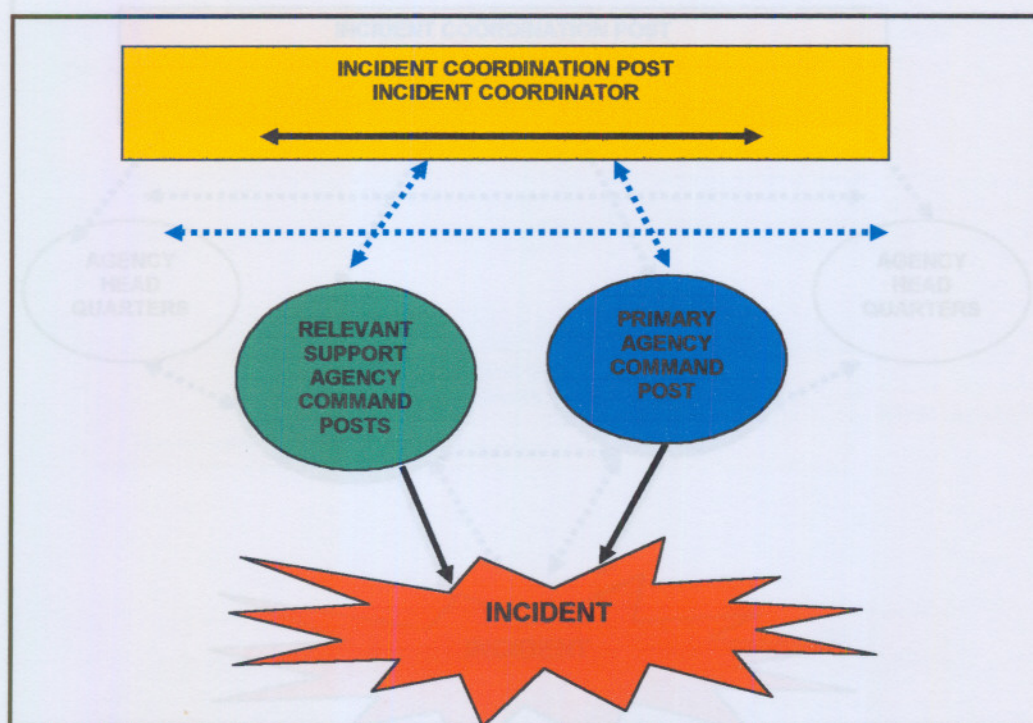**Figure 5.7: Span of management Level 2 Response**

5.3.2.2 Communication

A level 2 response involves:

- two way vertical communication between the agency commanders and agency personnel in the execution of their operational on-site duties;

- two way vertical communication between agency command posts and their agency headquarters for reporting, operations and own resource management only;
- two way vertical communication between agency command posts and the Incident Coordination Post for integrated and coordinated on-site operations; and
- horizontal two way communication between agency personnel within and across agencies for the execution of their duties (refer to sections 4.5.1.4, 5.2.14, 5.2.13 and 5.2.15).
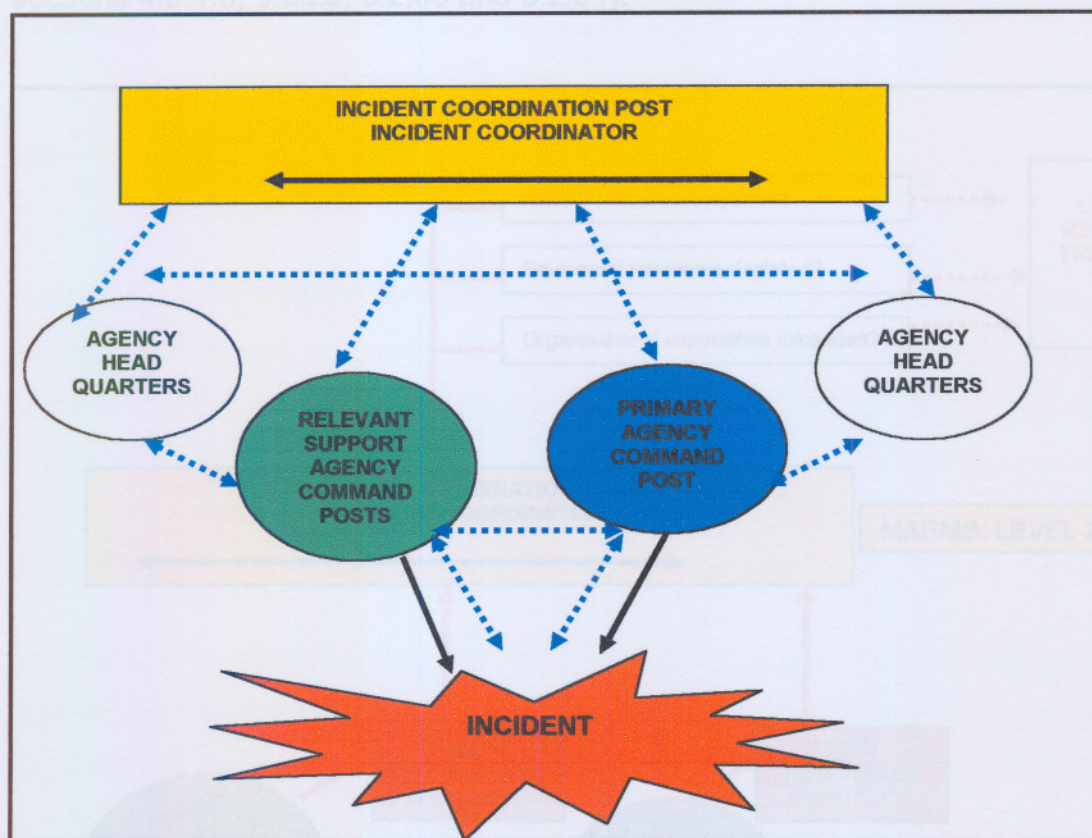
Figure 5.8: Communication lines Level 2 Response

5.3.2.3 Reporting

Reporting is executed in terms of internal agency operating protocols for own agency on site operations; and to the ICP by means of situation reports in accordance with predetermined standard operating protocols and for notification to the ICP that saturation of available own agency resource

thresholds is approaching (refer to Table 2.2 and sections 3.5, 4.5.1.4, 5.2.3, 5.2.16, 5.2.17, 5.2.29 and 5.2.30).

5.3.2.4 Triggers for escalating to a level 3 response

Immediately when the incident demands required to manage the situation effectively exceed the available own resource thresholds of any agency in terms of personnel; equipment; and organisational capabilities; then the Incident Coordinator activates a level 3 response (refer to Table 2.2 and to sections 4.5.1.5, 5.2.29, 5.2.30 and 5.2.31).

Figure 5.9: Level 3 Response Activation

5.3.3 MARMS: Level 3 Response

A level 3 response constitutes a response involving multiple agencies to an incident, the magnitude of which, demands resources in excess of the available own resource thresholds of any single agency which has statutory responsibility to deal with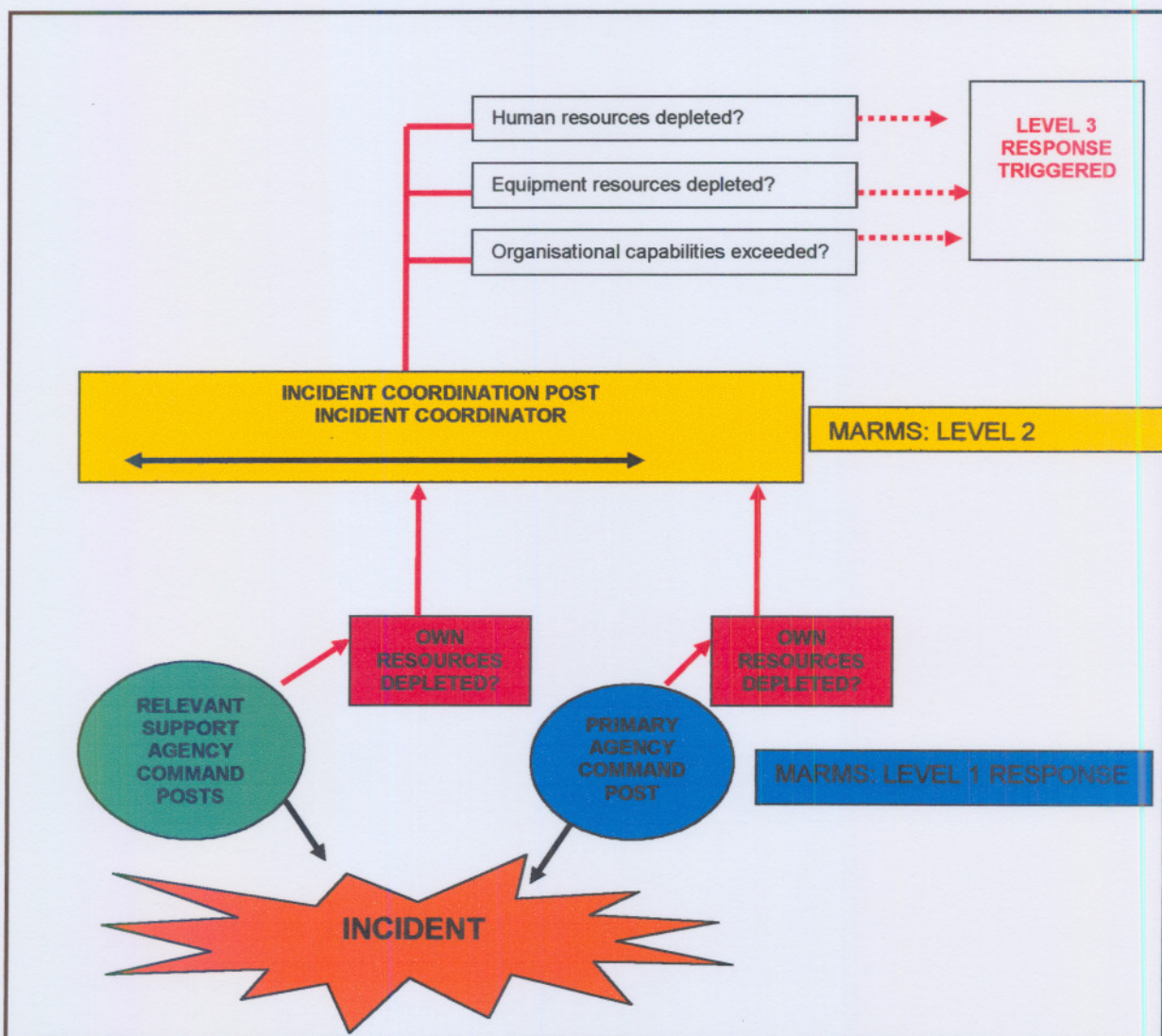 the primary or secondary effects of the incident. It is applies to a response which demands human resources, equipment resources or organisational capabilities and/or decision making which exceeds local capacity to the extent that it requires the engagement of either:

- executive decision making; or
- resources from outside of jurisdictional boundaries; or
- powers to invoke extraordinary measures.

Accordingly the occurrence can be classified as a local disaster and where necessary declared as municipal state of disaster (refer to Table 2.2 and to sections 3.6.1.4, 3.10, 4.5.1.1, 4.5.1.2, 4.5.1.3, 4.5.1.5, 5.2.26, 5.2.27, 5.2.28, 5.2.29, 5.2.30 and 5.2.31).

5.3.3.1 Span of management and scope of authority

The span of management applied in a level 3 response is that of horizontal coordination and decision making, exercised from the Joint Operations Centre (JOC) which is established by the JOC Coordinator (refer to sections 3.5.9.4, 3.5.10, 4.5.1.1, 4.5.1.2, 4.5.1.3, 5.2.6, 5.2.20, and 5.2.21).

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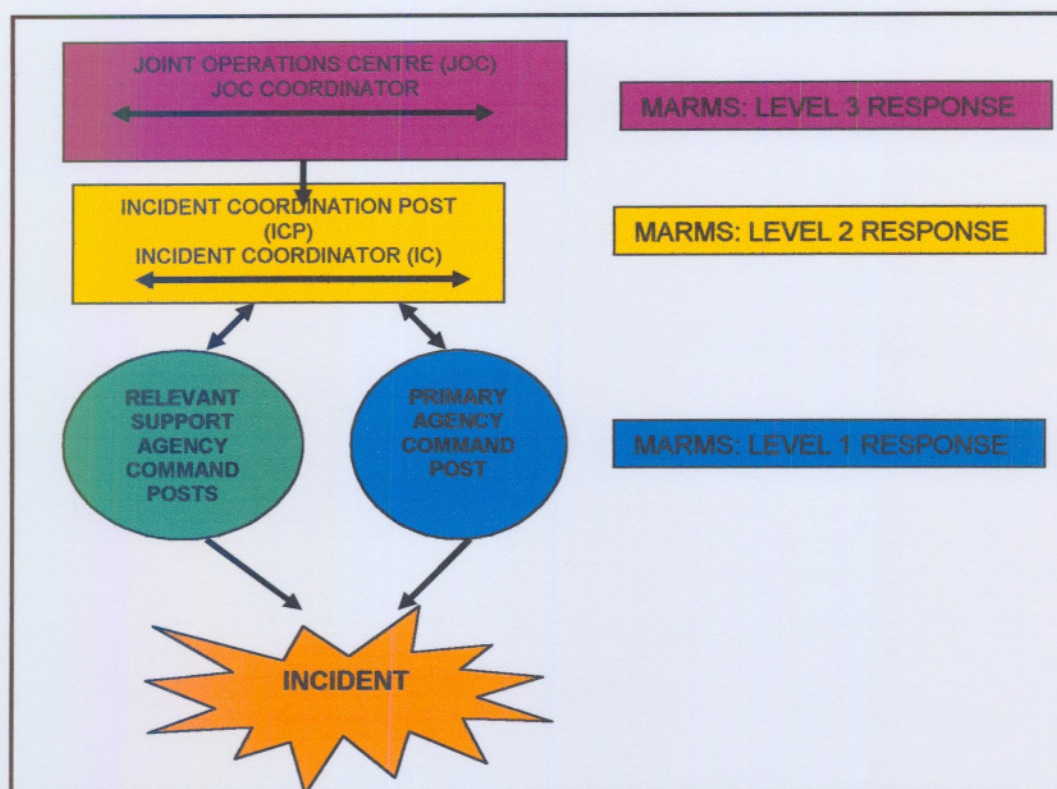
Figure 5.10: Span of management Level 3 Response

5.3.3.2 Communication

A level 3 response involves:

- two way vertical communication between the agency commanders and agency personnel in the execution of their operational on-site duties;
- horizontal communication between the agency personnel both within agencies and across agencies;
- two way vertical communication between agency command posts and their agency headquarters for reporting, operations and own resource management only;
- two way vertical communication between agency command posts and the Incident Coordination Post for integrated and coordinated on-site operations;
- two way vertical communication between the Incident Coordination Post(s) and the Joint Operations Centre;

- horizontal communication between JOCs within the jurisdiction for situation reporting only;

- two way vertical communication between the Joint Operations Centre and the Municipal Disaster Management Centre (MDMC);

- two way vertical communication between the CCC at the MDMC and affected and at risk communities and areas;

- horizontal communication between the MDMC and relevant neighbouring MDMCs;

- two way vertical communication between the MDMC and the relevant Provincial Disaster Management Centre (PDMC); and

- two way vertical communication between the MDMC and the National Disaster Management Centre (NDMC) (refer to sections 4.5.1.4, 5.2.13, 5.2.14, and 5.2.15).

5.3.3.3 Reporting

Reporting lines for a Level 3 Response are as follows:

- according to intra-agency operating protocols for own agency on site operation;

- to the ICP by means of situation reports in accordance with predetermined standard operating protocols and for notification to the ICP that saturation of available own agency resource thresholds is approaching;

- from the ICP to the JOC for situation reporting according to predetermined reporting protocols and for all additional resource requirements which exceed the available own resource thresholds of any agency in terms of personnel, equipment or organisational capabilities;

- between the JOC or JOCs and the relevant Municipal Disaster Management Centre (MDMC) for situation reporting only;

- between the MDMC and the PDMC for situation reporting;

- between the MDMC and the NDMC for situation reporting;

- between the CCC at the MDMC and affected and at risk communities and areas for assessment situation reporting and early warnings; and
- between the CCC at the MDMC and neighbouring MDMCs for situation reporting and early warnings (refer to section 4.5.1.4, 5.2.3, 5.2.16, 5.2.23, 5.2.25, 5.2.26 and 5.2.31).
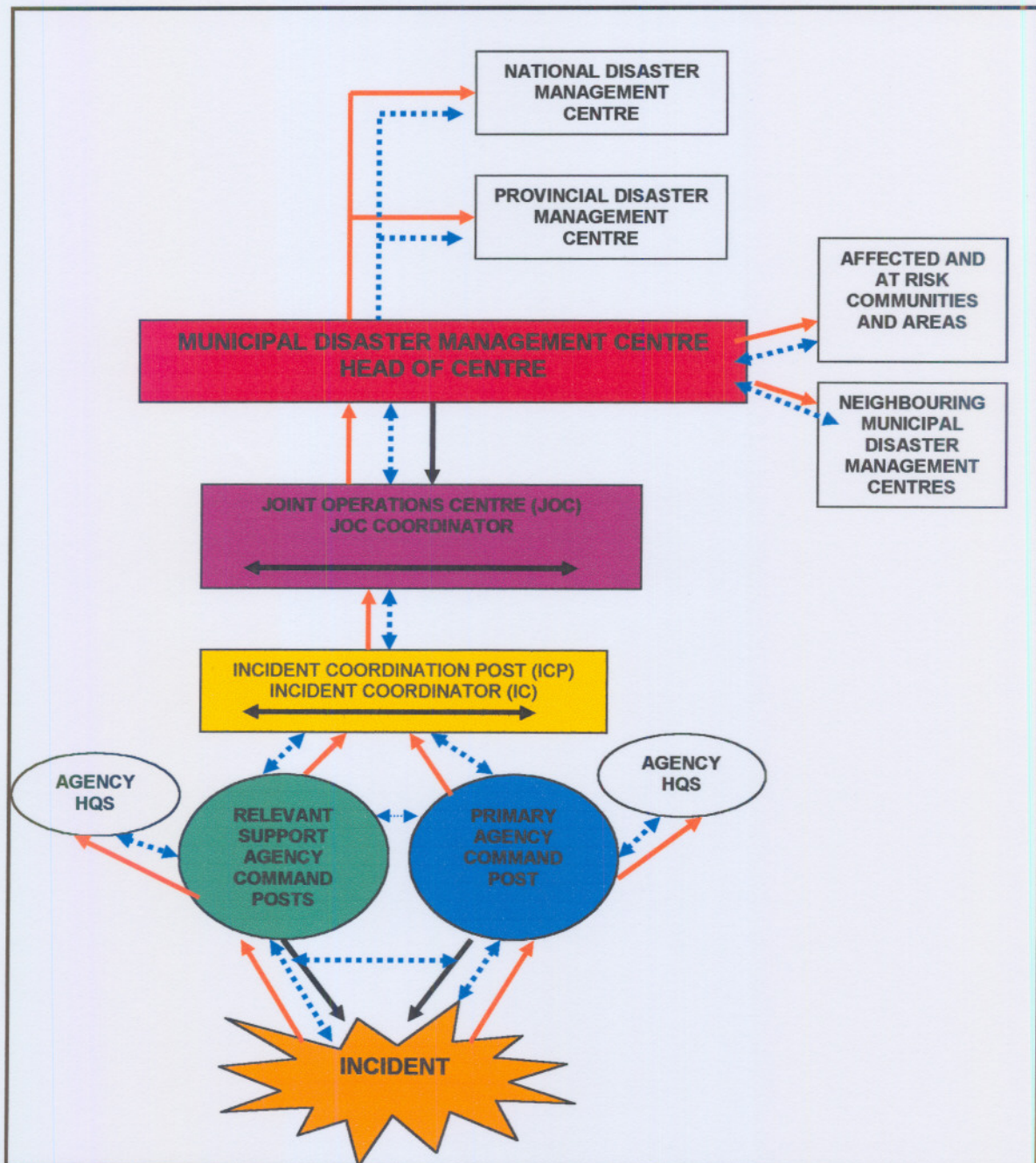
Figure 5.11: Communication and reporting lines Level 3 Response

5.3.3.4 Triggers for escalating to a level 4 response

Immediately when the incident demands required to manage the situation effectively are such that local resource thresholds are reaching saturation or exceed jurisdictional or legislative authority in terms of human resources; equipment resources; and/or organisational capabilities then the JOC Coordinator reports the situation to the MDMC and the Head of the Centre activates a level 4 response (refer to Table 3.2 and to sections 3.6.1.2, 3.6.1.4, 4.5.1.5 and 5.2.31).
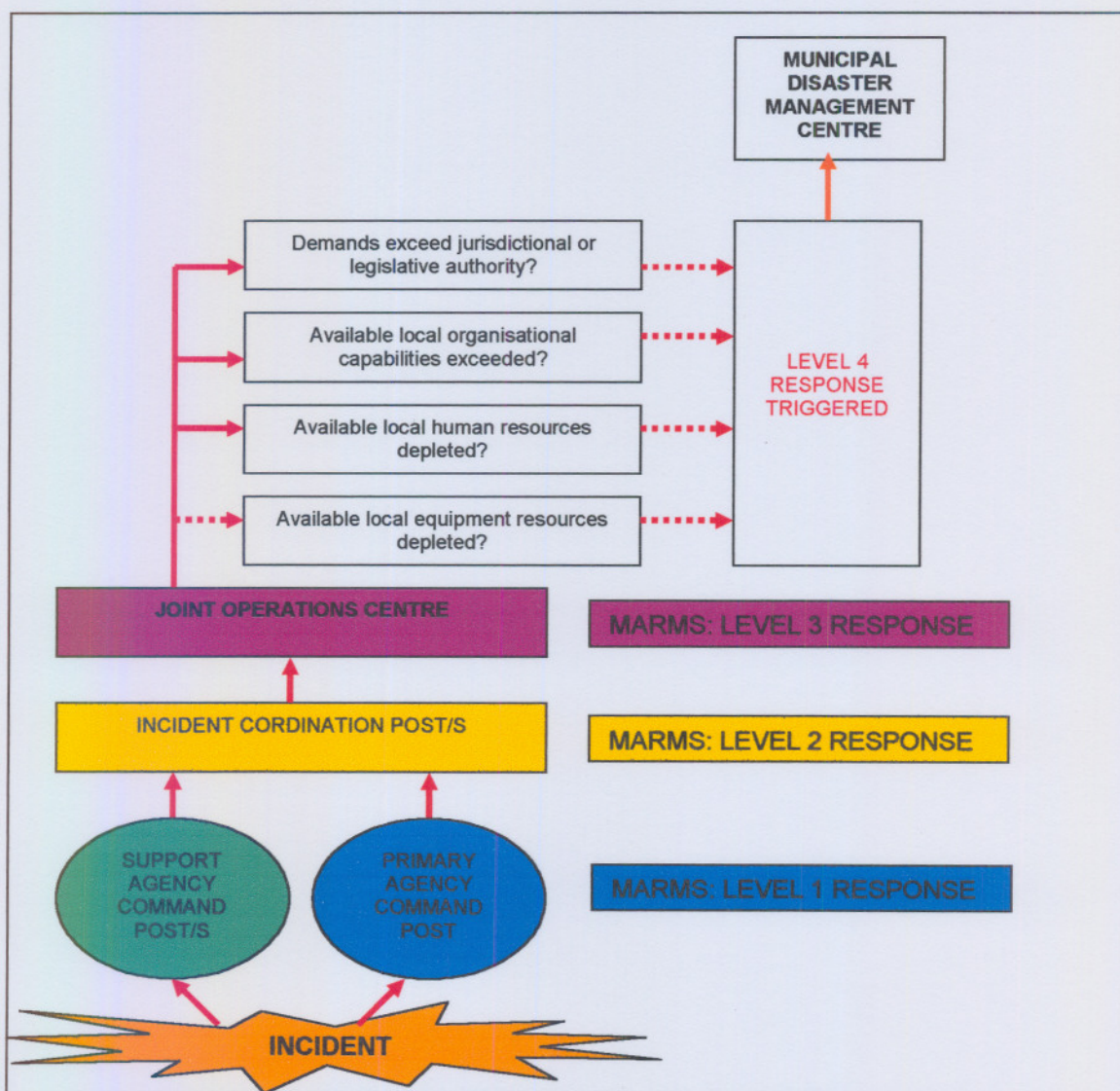
Figure 5.12: Level 4 Response activation

5.3.4 MARMS: Level 4 Response

A level 4 response applies to the following instances:

5.3.4.1 A single occurrence response

A level 4 response applies in the case of a single occurrence which is of such magnitude that it demands human resources, equipment resources or organisational capabilities and/or decision making which exceeds local capacity to the extent that it requires the engagement of either:

- executive decision making; or
- resources from outside of jurisdictional boundaries; or
- powers to invoke extraordinary measures.

Accordingly it can be classified as a local disaster and where necessary declared as a local state of disaster (refer to Table 3.1 and to sections 3.6.1.2, 3.6.1.4, 4.5.1.1, 4.5.1.2, 4.5.1.3, 4.5.1.5, 5.2.26, 5.2.27, 5.2.29, 5.2.30 and 5.2.31).

5.3.4.2 Simultaneous multiple level 3 responses

A level 4 response applies in the case of a series of Level 3 response operations taking place simultaneously in the jurisdiction of:

- a single local municipality; or
- in multiple local municipalities within the jurisdiction of a district municipality; or
- a metropolitan municipality,

It applies to a situation where *the sum of the combined demands* in terms of human resources, equipment resources or organisational capabilities and/or decision making exceeds local capacity to the extent that it requires the engagement of either:

- executive decision making; or
- resources from outside of jurisdictional boundaries; or
- powers to invoke extraordinary measures.

Accordingly it can be classified as a local disaster and where necessary declared as municipal state of disaster (refer to Table 3.1 and to sections 3.6.1.2, 3.6.1.4, 4.5.1.1, 4.5.1.2, 4.5.1.3, 4.5.1.5, 5.2.26, 5.2.27, 5.2.29, 5.2.30 and 5.2.31).

5.3.4.1 Span of management and scope of authority

The span of management applied in a level 4 response is that of direction spanning horizontally across jurisdictional boundaries; executive decision making; invoking extraordinary statutory powers necessary to deal effectively with the situation and is exercised by the Head of the Municipal Disaster Management Centre supported by the Disaster Direction Team from the Disaster Operations Centre (DOC) within the MDMC (refer to sections 3.6.1.2, 3.6.1.4, 4.5.1.1, 4.5.1.2, 4.5.1.3, 5.2.8, 5.2.23, 5.2.26, 5.2.27, 5.2.28, 5.2.29 and 5.2.30).
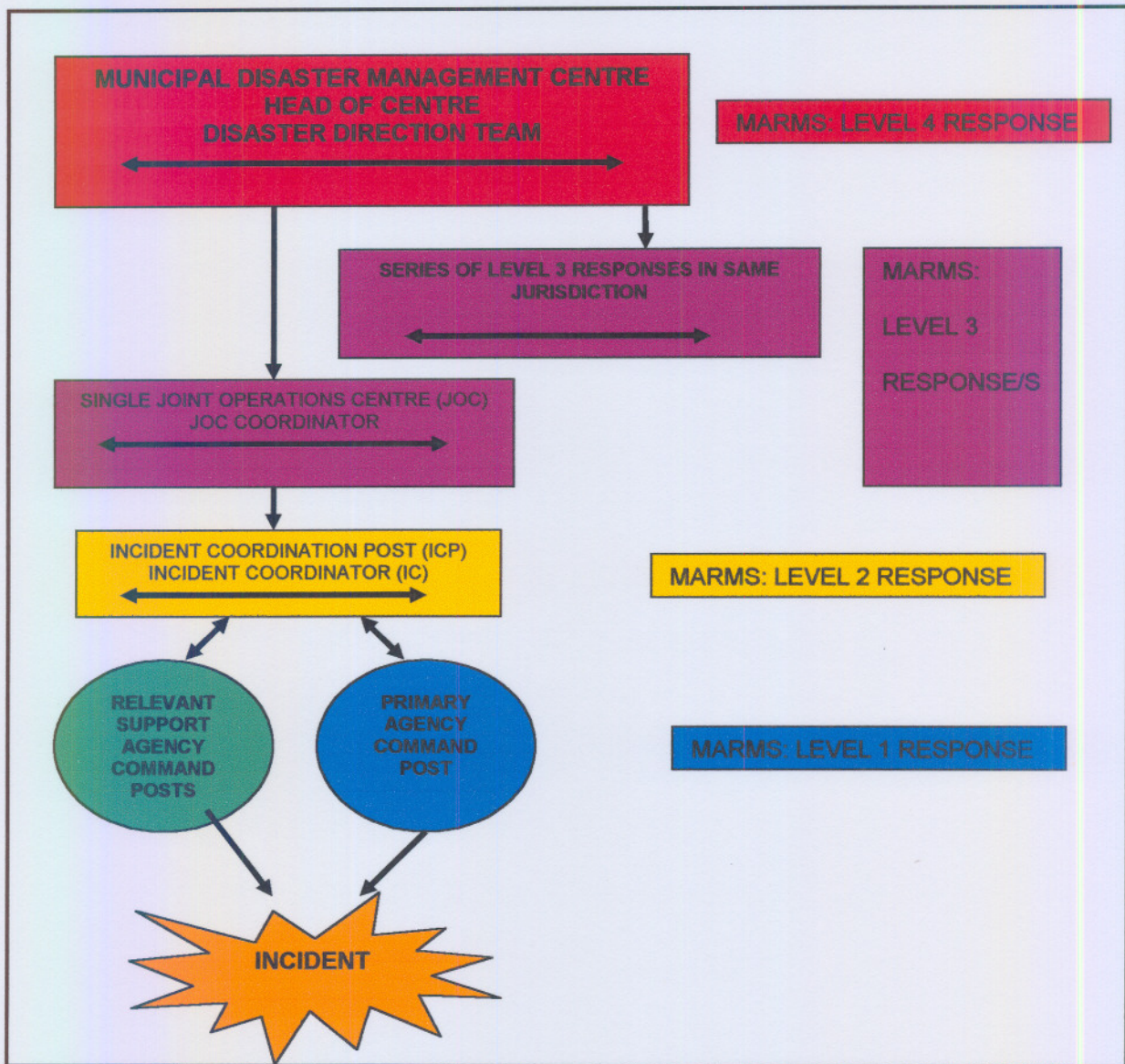
Figure 5.13: Span of management Level 4 Response

5.3.4.2 Communication

A level 4 response involves:

- two way vertical communication between the Joint Operation Centre or Centres in the case of a series of Level 3 responses taking place in the same municipal jurisdiction and the MDMC;
- horizontal communication between the JOCs for situation reporting

- two way vertical communication between the MDMC (CCC) and affected and at risk communities and areas for assessment situation reporting and early warnings;
- two way vertical communication between the MDMC and the PDMC for situation reporting;
- horizontal communication between the MDMC and relevant neighbouring MDMCs for situation reporting; and
- two way vertical communication between the MDMC and the NDMC for situation reporting (refer to sections 3.6.1.2, 3.6.1.4, 4.5.1.4, 5.2.13, 5.2.14 and 5.2.15).

5.3.4.3 Reporting

Reporting lines for a Level 4 Response are as follows:

- according to intra-agency operating protocols for own agency on site operations;
- to the ICP by means of situation reports in accordance with predetermined standard operating protocols and for notification to the ICP that saturation of available own agency resource thresholds is approaching;
- from the ICP to the JOC for situation reporting according to predetermined reporting protocols and for all additional resources requirements which exceed the available own resource thresholds of any agency in terms of personnel, equipment or organisational capabilities;
- between the JOC or JOCs and the relevant Municipal Disaster Management Centre (MDMC) for situation reporting;
- between the MDMC and the JOC or JOCs for direction;
- between the MDMC and relevant neighbouring MDMCs for situation reporting;
- between the MDMC and the PDMC for situation reporting; and

- between the MDMC and the NDMC for situation reporting (refer to sections 3.6.1.2, 3.6.1.4, 5.2.3, 5.2.15, 5.2.22, 5.2.23, 5.2.24 and 4.5.1.4)
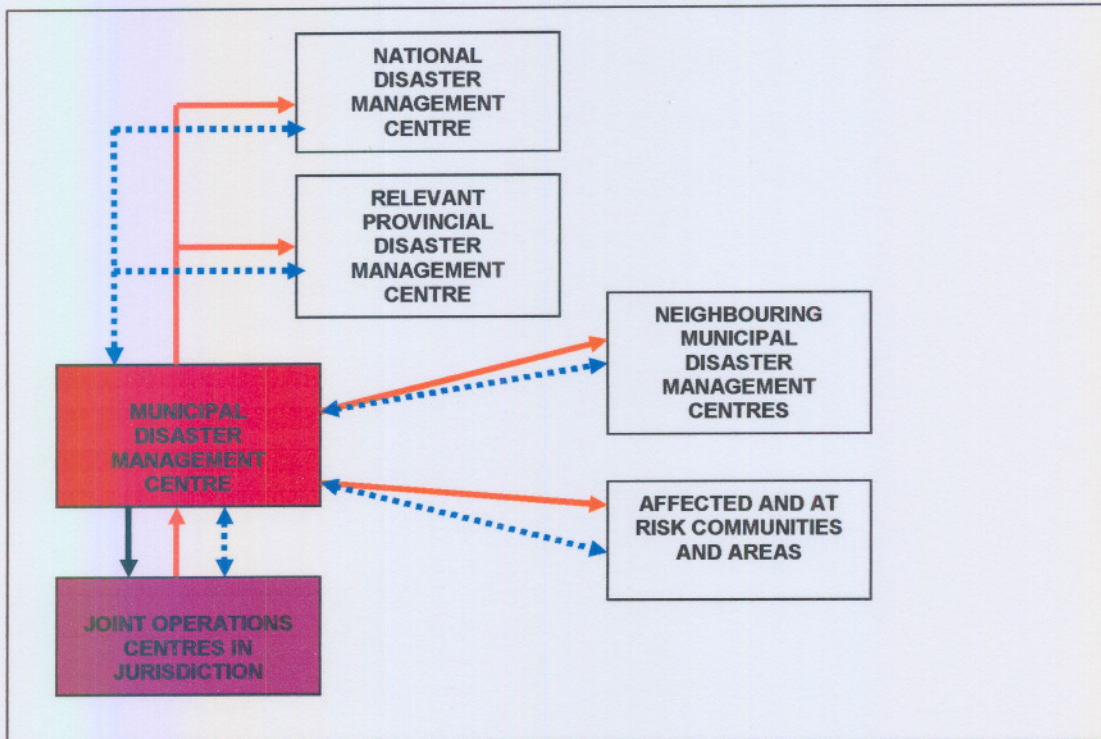
Figure 5.14: Communication and reporting lines for Level 4 Response

5.3.4.4 Triggers for escalating to a level 5 response

Immediately when the demands required to coordinate and manage the disaster effectively are such that resource thresholds of a district or metropolitan municipality are reaching saturation or exceed jurisdictional or legislative authority in terms of human resources; equipment resources; organisational capabilities; and/or contingency reserve thresholds then the Head of the MDMC reports the situation to the PDMC, thus activating a level 5 response (refer to Table 3.1 and sections 4.5.1.5 and 5.2.31).
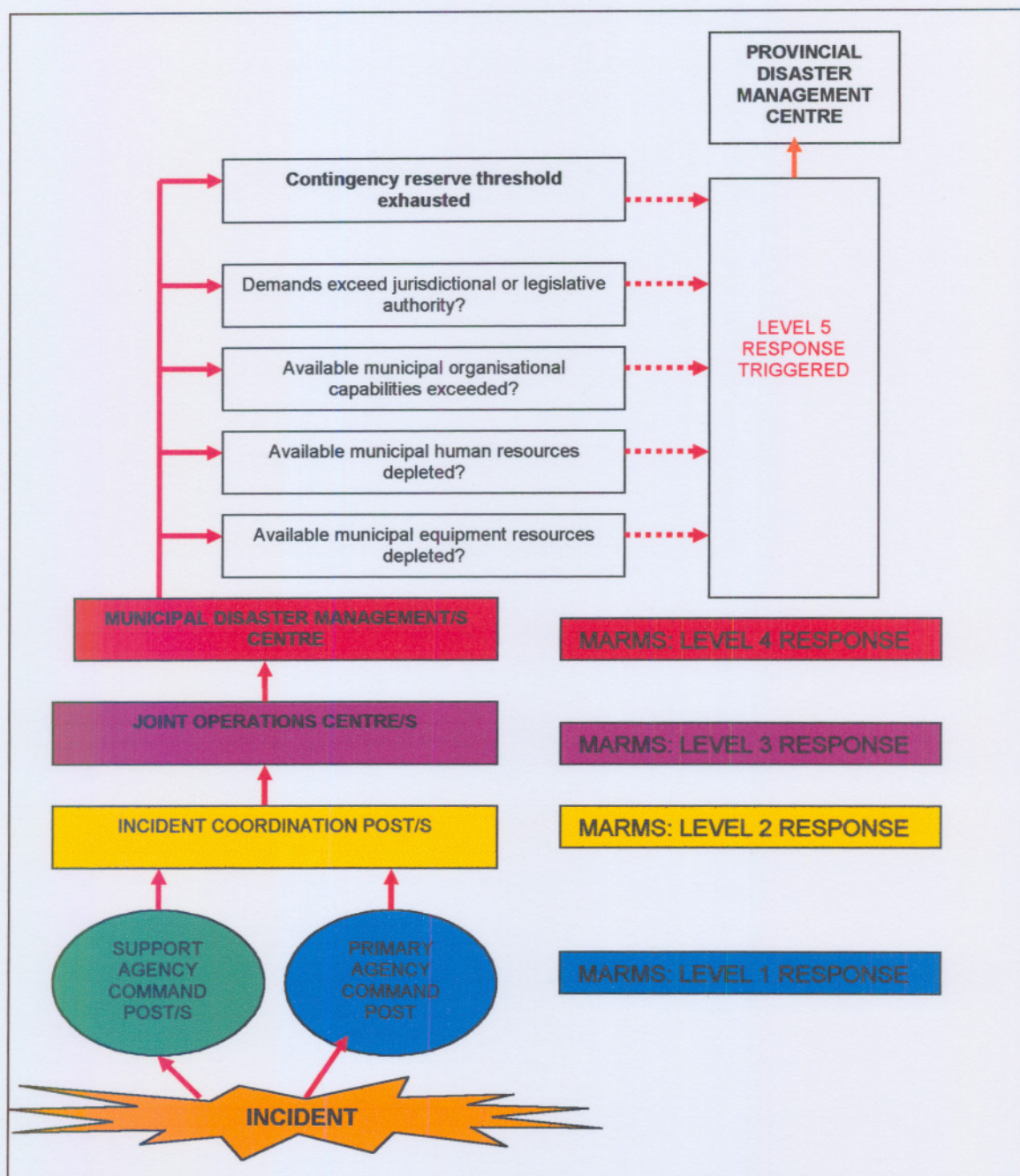
Figure 5.15: Level 5 Response activation

5.3.5 MARMS: Level 5 Response

A level 5 response applies to:

- an occurrence of such magnitude that it exceeds the statutory and jurisdictional capabilities of a single district or metropolitan municipality to deal with it effectively; or

- a series of Level 4 response operations taking place simultaneously in the jurisdiction of a province.

Accordingly the occurrence can be classified as a provincial disaster and where necessary declared as provincial state of disaster (refer to Table 3.1 and to sections 3.6.1.2, 3.6.1.4, 4.5.1.1, 4.5.1.2, 4.5.1.3, 4.5.1.5, 5.2.29, 5.2.30 and 5.2.31).

5.3.5.1 Span of management and scope of authority

The span of management applied in a level 5 response is that of direction spanning horizontally across jurisdictional boundaries; executive decision making; invoking extraordinary statutory powers necessary to deal effectively with the situation and is exercised by the Head of the Provincial Disaster Management Centre supported by the Disaster Direction Team from the Disaster Operations Centre (DOC) (refer to sections 3.6.1.2, 3.6.1.4, 4.5.1.1, 4.5.1.2, 4.5.1.3, 5.2.8, 5.2.24, 5.2.26, 5.2.29, 5.2.30 and 5.2.31).

Figure 5.16: Span of management: Level 5 Response

5.3.5.2 Communication

A level 5 response involves:

- two way vertical communication between the MDMC and the PDMC;
- two way vertical communication between the PDMC and the MDMC or MDMCs;
- horizontal communication between the PDMC and relevant neighbouring PDMCs for situation reporting; and

- two way vertical communication between the PDMC and the NDMC for situation reporting (refer to sections 3.6.1.2, 3.6.1.4, 4.5.1.4, 5.2.13, 5.2.14 and 5.2.15)

5.3.5.3 Reporting

Reporting lines for a Level 5 Response are as follows:

- between the JOC or JOCs and the relevant Municipal Disaster Management Centre or Centres (MDMCs) for situation reporting;
- between the relevant Municipal Disaster Management Centre or Centres (MDMCs) and the JOC or JOCs and for resource management;
- between the MDMCs and the PDMC for situation reporting;
- between the PDMC and the MDMCs for direction and for resource management;
- between the PDMC and neighbouring PDMCs for situation reporting;
- between the PDMC and the NDMC for situation report (refer to sections 3.6.1.2, 3.6.1.4, 4.5.1.4, 5.2.13, 5.2.14, 5.2.15, 5.2.23 and 5.2.24).
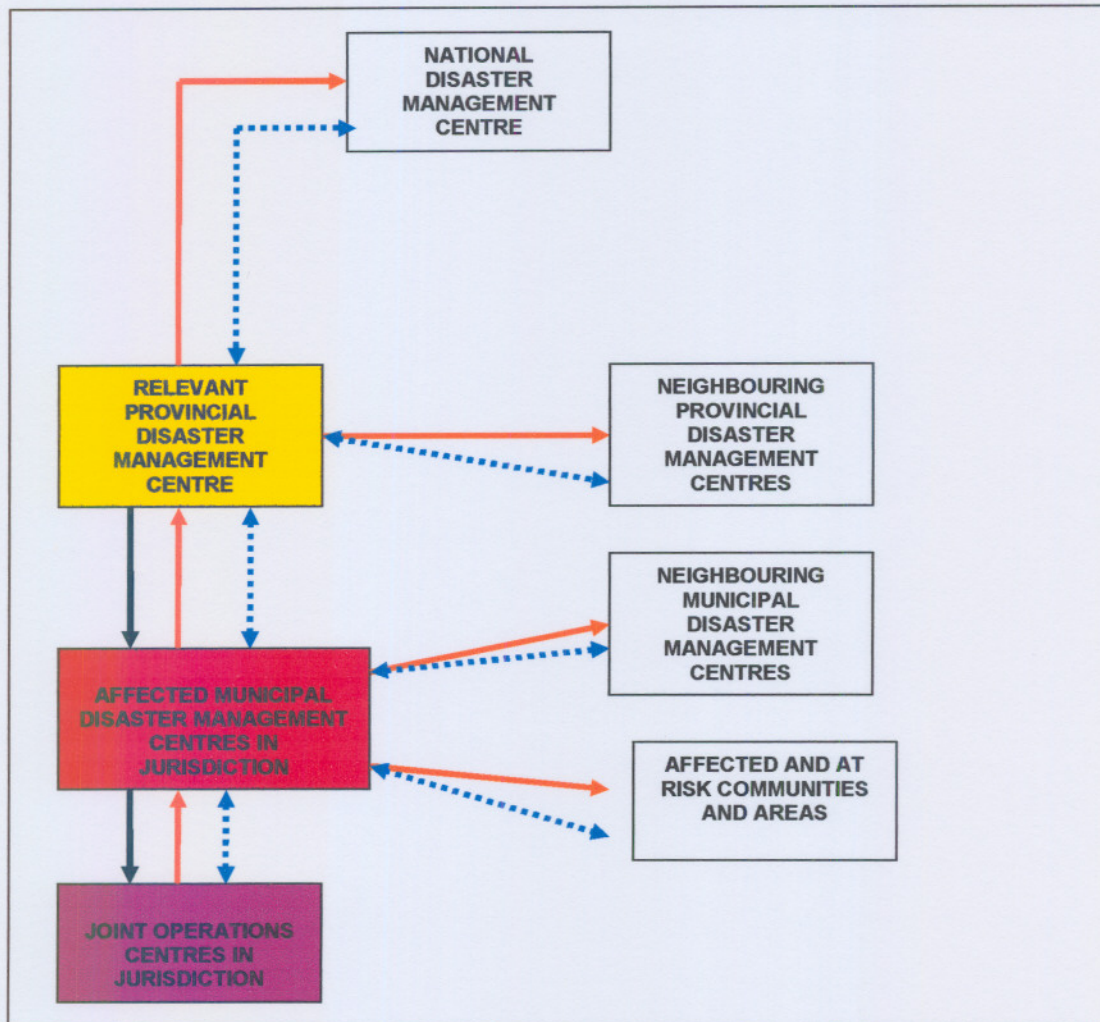
Figure 5.17: Communication and reporting lines for Level 5 Response

5.3.5.4 Triggers for escalating to a level 6 response

Immediately when the demands required to coordinate and manage the disaster effectively are such that resource thresholds of a province are reaching saturation or exceed jurisdictional or legislative authority in terms of:

- human resources;
- equipment resources;
- organisational capabilities; and/or
- contingency reserve thresholds.

Accordingly the Head of the PDMC reports the situation to the NDMC, thus activating a level 6 response (refer to Table 3.1 and sections 4.5.1.5 and 5.2.31).
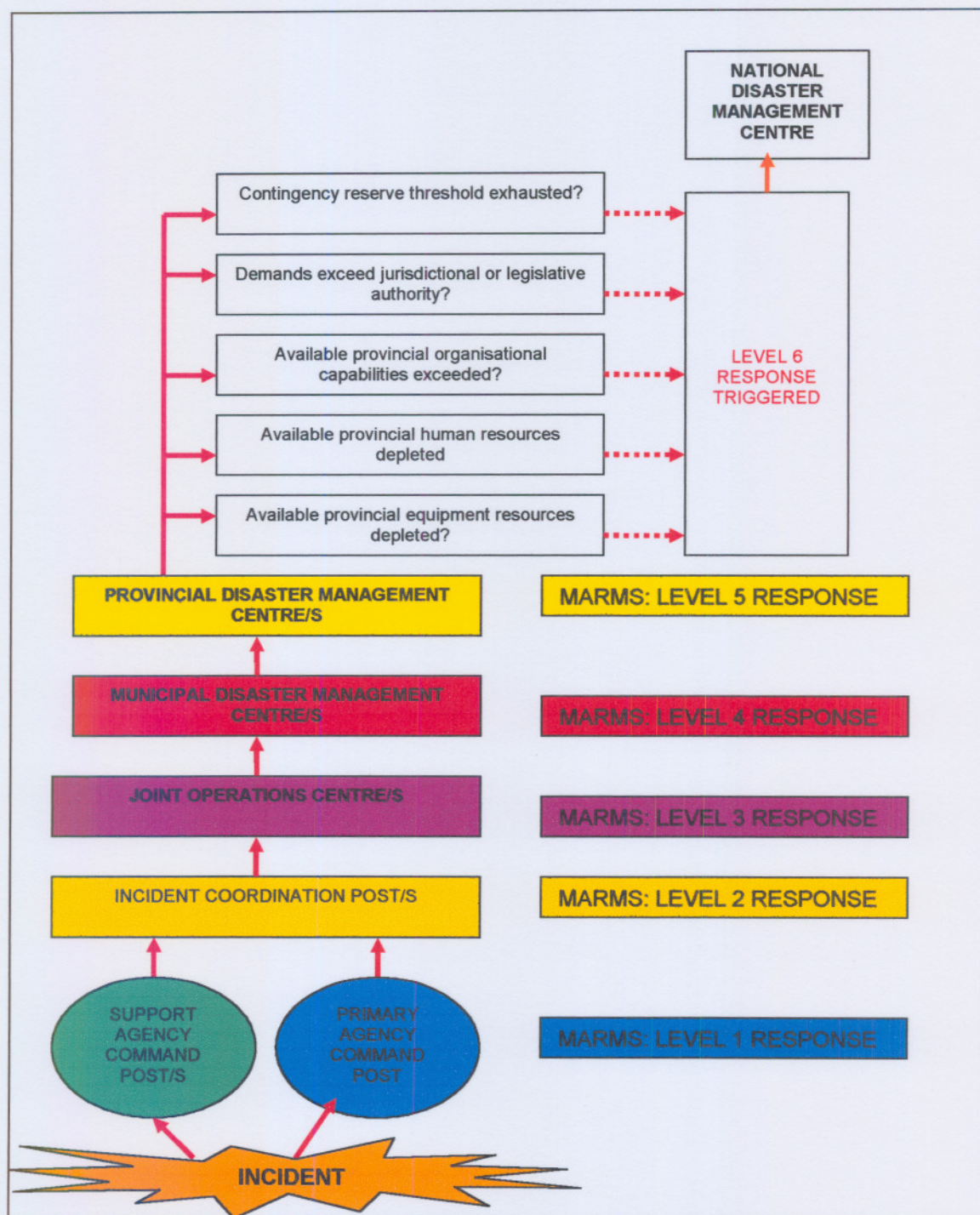
Figure 5.18: Level 6 Response activation

5.3.6 MARMS: Level 6 Response

A level 6 response applies to:

- an occurrence of such magnitude that it exceeds the statutory and jurisdictional capabilities of a single province to deal with it effectively ; or

- a series of level 5 response operations taking place simultaneously in the country.

Accordingly the occurrence can be classified as a national disaster and where necessary declared as a national state of disaster (refer to Table 3.1 and to sections 3.6.1.2, 3.6.1.4, 4.5.1.1, 4.5.1.2, 4.5.1.3, 4.5.1.5, 5.2.26, 5.2.27, 5.2.29, 5.2.30 and 5.2.31).

5.3.6.1 Span of management and scope of authority

The span of management applied in a level 6 response is that of direction spanning horizontally across jurisdictional boundaries; executive decision making; invoking extraordinary statutory powers necessary to deal effectively with the situation and is exercised by the Head of the National Disaster Management Centre by the Disaster Direction Team from the Disaster Operations Centre (DOC) (refer to Table 3.1 and to sections 3.6.1.2, 3.6.1.4, 4.5.1.1, 4.5.1.2, 4.5.1.3, 5.2.8, 5.2.24, 5.2.25, 5.2.26, 5.2.27, 5.2.28, 5.2.29, 5.2.30 and 5.2.31).
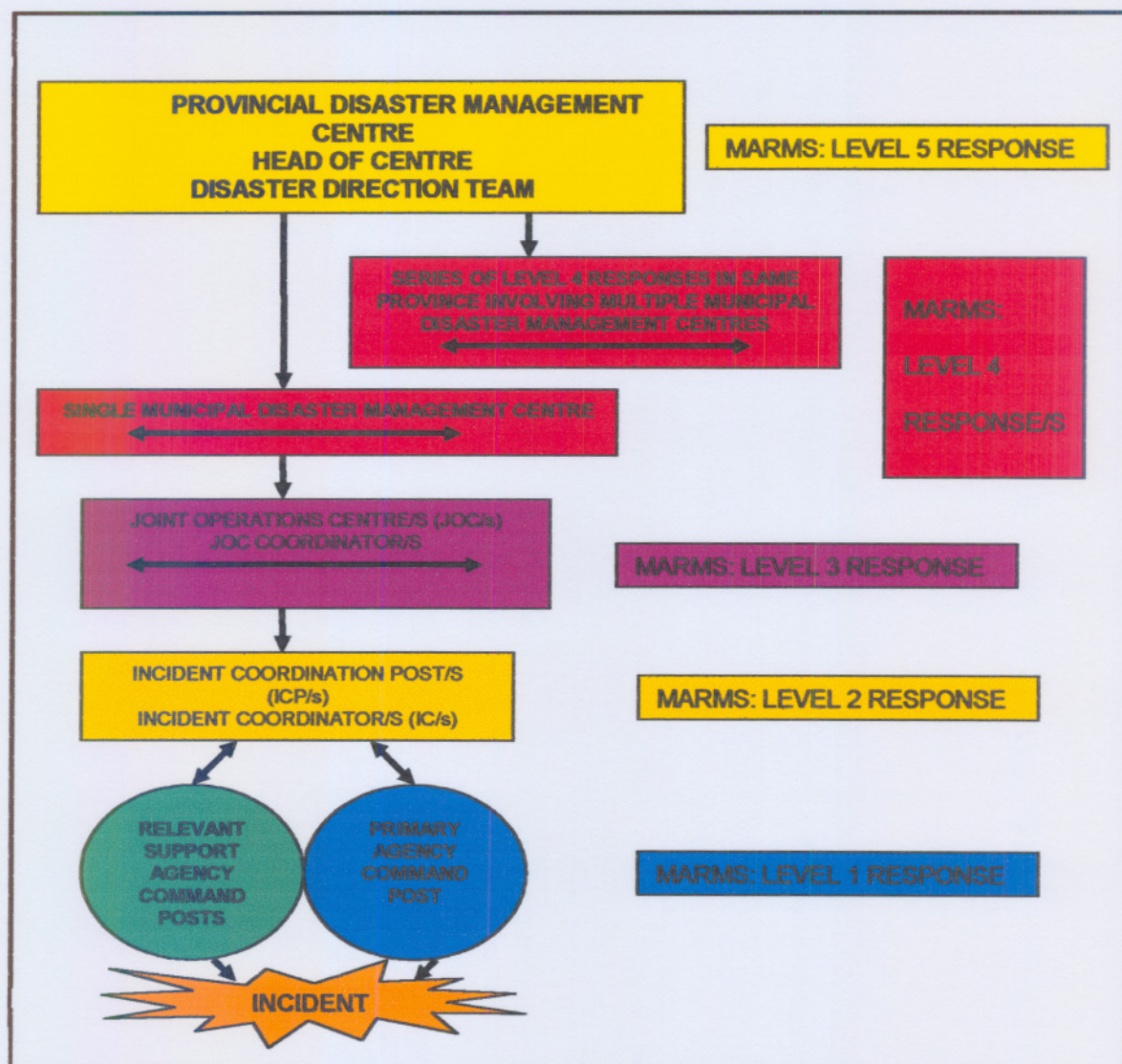
.
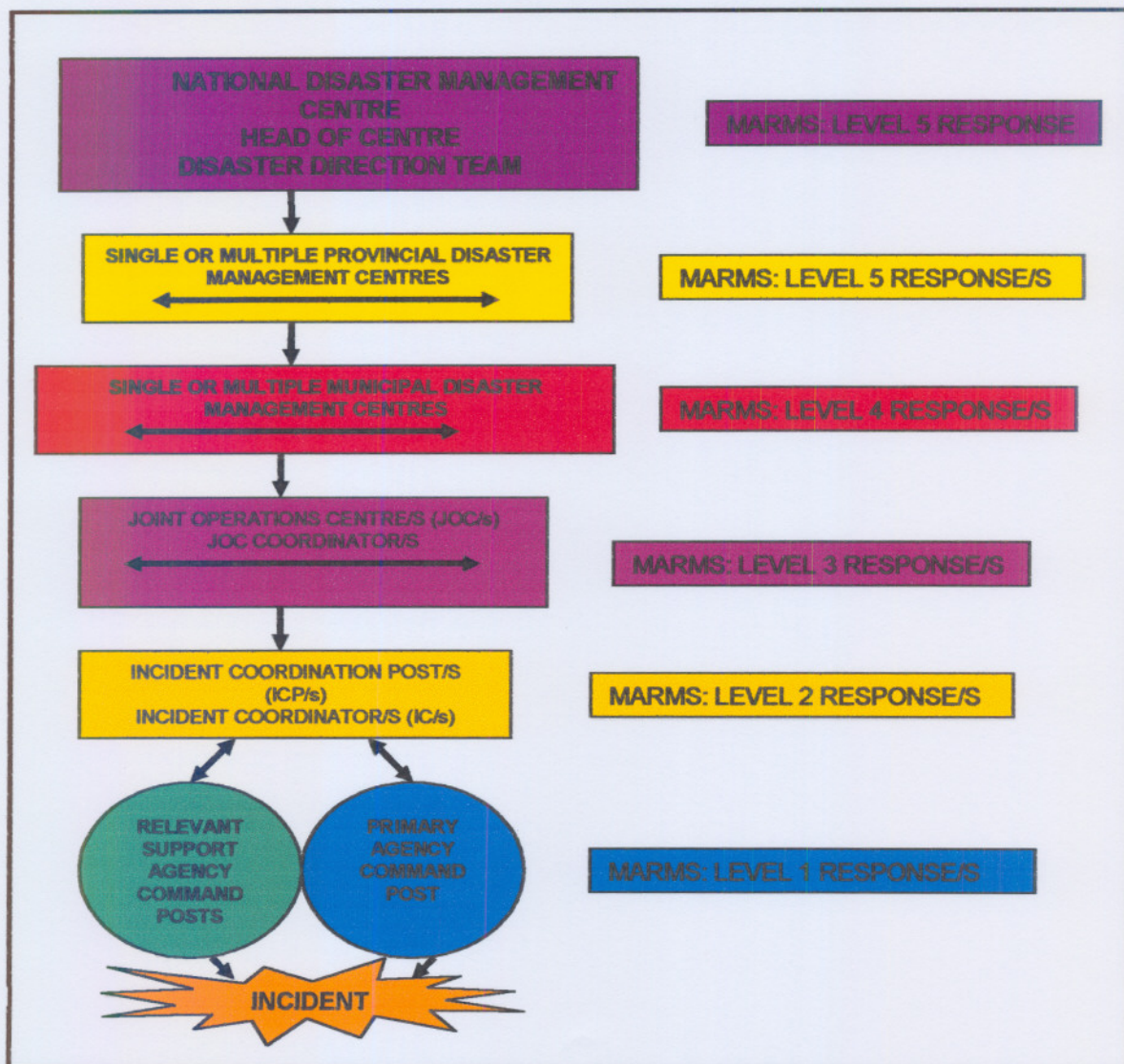
Figure 5.19: Span of management: Level 6 Response

5.3.5.2 Communication

A level 6 response involves:

- two way vertical communication between the JOCs in the jurisdiction of the relevant MDMCs;
- two way vertical communication between the relevant MDMC/s and the PDMC/s

- two way vertical communication between the PDMC or PDMCs and the MDMC or MDMCs;
- horizontal communication between the PDMC and relevant neighbouring PDMCs;
- two way vertical communication between the affected PDMC/s and the NDMC;
- horizontal communication between the NDMC; neighbouring countries; regional and international agencies such as the Southern African Development Community and the United Nations (refer to sections 3.6.1.2, 3.6.1.4, 4.5.1.4, 5.2.13, 5.2.14 and 5.2.15).

5.3.6.3 Reporting

Reporting lines for a Level 6 Response are as follows:

- between the JOCs and the relevant MDMC/s for situation reporting and direction;
- between the MDMC/s and the PDMC for situation reporting;
- between the PDMC and the MDMC/s for direction and resource management;
- between the PDMC and the NDMC for situation reporting;
- between the NDMC and the affected PDMC/s for direction and for resource management;
- between the NDMC and neighbouring countries for situation reporting and early warnings (refer to sections 3.6.1.2, 3.6.1.4, 4.5.1.4, 5.2.3, 5.2.15, 5.2.22, 5.2.23 and 5.2.24).
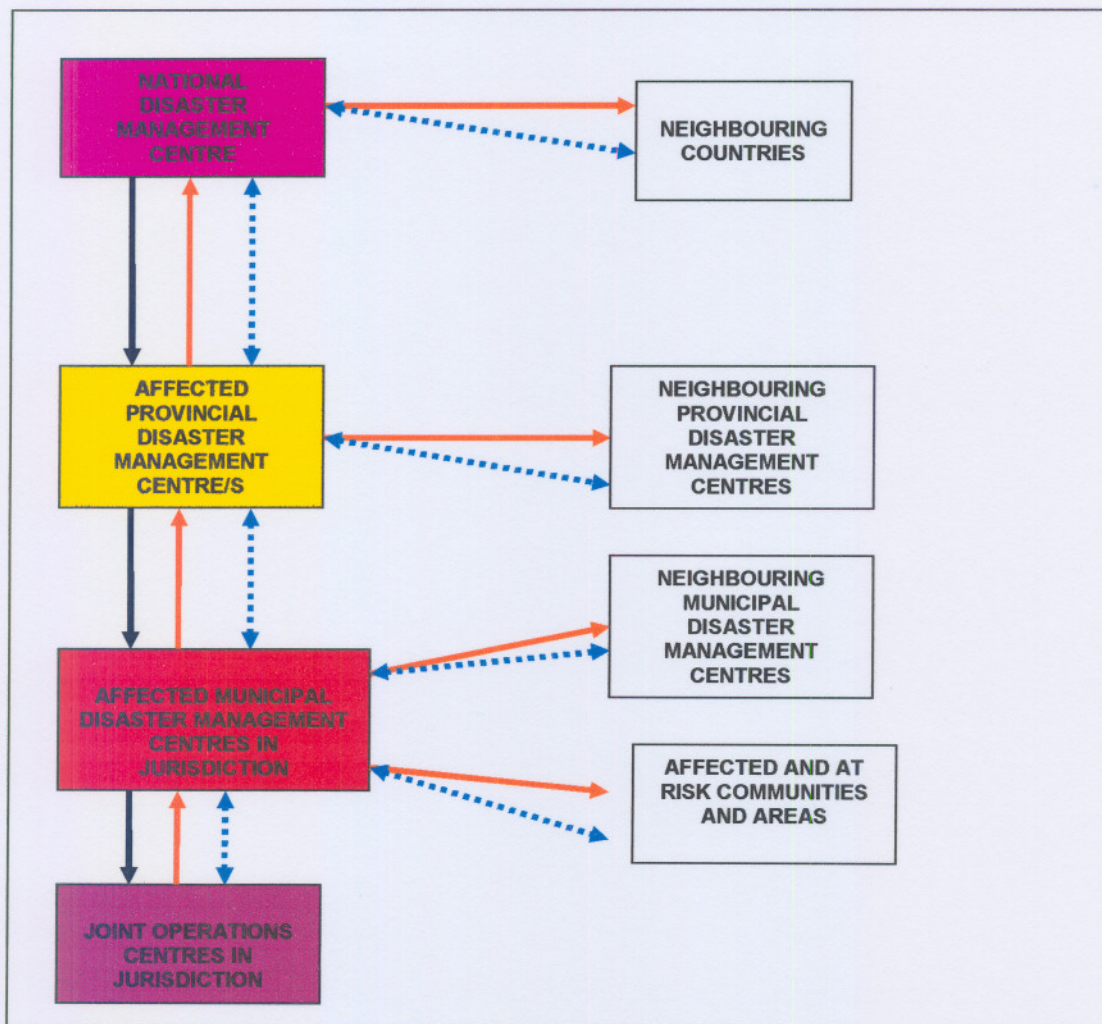
Figure 5.20: Communication and reporting lines for Level 6 Response

5.4 CONCLUSION

The Multi-agency Response Management System model (MARMS) (which is presented as a composite graphic in Figure 5.21 on page 133), is the product of the research conducted for this study. The model provides a generic framework on which a comprehensive multi-agency response management system can be based. In addition it will facilitate and contribute substantially to ensuring the establishment of joint standards of practice and the development of contingency plans and operational protocols. It also compliments the work of Van Niekerk (2001), *"An intersectoral model for disaster contingency planning"*.

It has been presented in six escalating levels of response described according to the core concepts grounded in the research and identified as inherent to the model.

The model identifies the critical factors which trigger the need for higher levels of response management in providing for the natural escalation from a routine incident which can be handled effectively by a single response agency right up the hierarchy to the declaration of a national state of disaster.

The importance of consistency in training was highlighted section 5.2 as a core issue. Due to its generic characteristics this model will also lay the foundation for the introduction of a basic module into the curricula of all response agency personnel. The aspect of training will be addressed further in the next chapter.

Figure 5.21: A Model for a Multi-agency Response Management System (MARMS)

LEVEL 6 RESPONSE
NATIONAL DISASTER MANAGEMENT CENTRE

- Authority exceeded
- Capability exceeded
- Resources depleted

LEVEL 5 RESPONSE
AFFECTED PROVINCIAL DISASTER MANAGEMENT CENTRE/S

- Authority exceeded
- Capability exceeded
- Resources depleted

LEVEL 4 RESPONSE
AFFECTED MUNICIPAL DISASTER MANAGEMENT CENTRE/S IN JURISDICTION

- Authority exceeded
- Capability exceeded
- Resources depleted

LEVEL 3 RESPONSE
JOINT OPERATIONS CENTRE/S IN JURISDICTION

- Authority exceeded
- Capability exceeded
- Resources depleted

LEVEL 2 RESPONSE
INCIDENT COORDINATION POST/S

RELEVANT SUPPORT AGENCY HEAD QUARTERS

RELEVANT SUPPORT AGENCY COMMAND POSTS

LEVEL 1 RESPONSE PRIMARY AGENCY COMMAND POST

SUPPORT AGENCY SERVICES REQUIRED

PRIMARY AGENCY HEAD QUARTERS

INCIDENT

CHAPTER 6

RECOMMENDATIONS AND CONCLUSIONS

6.1 RECOMMENDATIONS

In order to achieve triangulation and to establish the relevance of the model which had been developed from the research undertaken, the model for a Multi-agency Response Management System (MARMS) for South Africa was circulated to discriminately selected national and international practitioners involved in response management, for scrutiny, comment as well as attitudinal and opinion testing.

The following recommendations are made on the basis of the results obtained from this process (refer to Annexure B):

6.1.1 Recommendation 1:

Further explicit refinement for each level of response is necessary to define the scope of authority; communication; and reporting lines (Moore, 2005; Laskey, 2005; and Paulsen, 2005). It is recommended that this be pursued in the development of standard operating protocols in accordance with the regulations to be developed and implemented in terms of Section 4.3 of the National Disaster Management Framework (South Africa, 2005:59) and then to be incorporated uniformly into the relevant contingency plans in the various spheres of government.

6.1.2 Recommendation 2:

The model establishes the foundation on which a comprehensive response management system can be built (Laskey,2005; Paulsen, 2005; Mc Leod, 2005; Nohashe, 2005; and Van Rensburg, 2005). The researcher, however, recommends that the development of a national standard for level one response is fundamental to the further development of this model. The

development of a generic model as the basis for this process could be pursued in a doctoral study.

6.1.3 Recommendation 3:

The model could contribute to the development of a basic training model for inclusion in the curricula of response agency personnel (Laskey, 2005; Paulsen, 2005; Pillay, 2005; Mc Leod, 2005; Nohashe, 2005; and Van Rensburg, 2005). In the long term this would address the problem of resistance; negative attitude; and lack of understanding which currently prevails and that has emerged as an intervening condition during the process of axial coding (refer to section 4.5.1). In order to address this problem in the short term it is recommended that the development of the national standard for level one response (refer to 6.1.2 above), should be undertaken through a participative process involving a collective of senior representatives from the professional bodies of the key primary and secondary response agencies in South Africa.

6.2 CONCLUSION

There is currently no national standard for the management of multi-agency response in South Africa. The research has shown that there is an urgent need for the development of a system which is supported by the requirements in the recently gazetted National Disaster Management Policy Framework.

The pivotal factor for the successful implementation of an effective response management system will depend on the attitudes of those vested with the responsibility of applying it in practice. Negative attitudes can be attributed to a lack of understanding of the concept and the absence of training. The development of a system requires the adoption of a participative process that will ensure ownership; imbue a sense of mutual respect and acceptance of jurisdictional authority; and at the same time enable integrated and coordinated operations as well as responsible decision making.

The findings of this research have shown that the management of multi-agency responses takes place on six escalating levels. Each level has inherent key characteristics that clearly define responsibility in terms of the span of management and the scope of statutory authority. It also has defined lines for communication, information sharing and reporting. This clear definition as well as the recognition of indicators that signal the need to trigger higher levels of management, authority and decision making, are crucial to achieving rapid and effective response.

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ANNEXURE A

Sample of data analysis coding process: Internet interviews

Internet interviews

JB: J Brown
BC: B Colenutt
MK: M Krenekamp
DH: D Hillebrand
AM: A Mc Carthy
TS: T Schroeder
WS: W Smith
MT: M Treuernicht

1. Understanding of the concept question cluster

What is your understanding of the concept of Incident Management Systems?

J B   Structured control of an incident.
BC   Dealing with a disaster in the most effective and efficient manner.
MK   To identify dangerous trends timorously in order to take or make the necessary remedial action.
D H   System to co-ordinate and pre-plan human and equipment resources.
AM   Systematic (computerised) method of management which works according to a set pattern.
TS   Integration of structures and resources
WS   A system with which all relevant agencies are familiar with, which allows for co-ordinated management.
MT   Managing incidents example the World Cup Cricket at Newlands and being that there.

How would you define Incident Management in your own words?

J B   Organised, and structured command and control of an incident.
BC   Planning a pre-arranged method to being treatment and evacuation of people in a disaster.
MK   In the aviation industry it is a way of managing an operation that has inherent risks, mechanical and human, that do occur but must be constantly monitored and analysed.
D H   Preplanned procedures and protocols and guidelines to safely and quickly restore (in this case) normal road use.
AM   Procedure whereby certain checks are in place to ensure an incident is handled effectively.
TS   The co-ordination of resources.
WS   The co-ordinated response and management to incidents utilising a predetermined protocol.
MT   Important role-players become involved to foresee that an incident goes of well without major accidents.

Is there a difference between Incident Management and Incident Command?
Please elaborate on your answer.

J B Yes, incident command is on site and incident management can be conducted from off site.

BC Management is the pre empted event whilst command is controlling and monitoring at the incident.

MK Yes, incident management, in my opinion, is the center that manages the incident on higher level of representation, where an incident command is the centre located as close to the accident scene as possible and controls all activities, also has direct communication with the incident management.

D H No, the "management team" should be in command

AM Yes, Management by all stakeholders as applicable while command is by one person designated for the job.

TS Yes. Incident management is a co-ordinated function. Command is command.

WS Co-ordination of the incident is line function

MT Yes, I would say the one is beforehand, planning etc and the other is during the incident - taking command of the situation.

Is there any relationship between Incident Management and Disaster Management? Please elaborate on your answer.

J B Yes, an incident could become a disaster, often what is an incident is called a disaster, but is only a minor incident.

BC An incident can generally be dealt with by local support systems. Disaster becomes an expanding incident.

MK Yes

D H Yes, the same services are involved.

AM No, incident has potential for disaster.

TS Yes. Differentiated generally by the scale of the problem.

WS Disaster Management should insure that Incident Management plans are in place. Disaster Management not to manage incident.

MT Yes, if an incident is not managed property, it can become a disaster.

From your understanding/experience at what stage does an incident 'become' a disaster?

J B When the local resources can no longer deal with theit, it might then be called a "major incident".

BC Having to call in the army, navy and airforce for help or even foreign assistance.

MK When there is further loss of life or property.

D H Fuzzy question! From a road perspective, it would be when people have to be evacuated, for example.

AM When there is major loss of life or property.

TS When it affects more than a small group or area.

WS	When the incident is of such a nature that local agency(s) resource is sufficient
MT	When something happens at the incident which is life threating, or can harm people or damage the environment.

Note! All also fall into authority cluster

Are there any guidelines of formal mechanisms in place to assist in making the differentiation between what constitutes an incident as opposed to a disaster? If there are, please elaborate on your answer, if not should there be guidelines and could you suggest an example?

J B	Within our area, being Sea Rescue, no.
BC	For example Ship "Jolly Rubino" fire was initially an incident. But when explosion displaced containers, some with very dangerous and hazardous chemical, into the sea, this became a disaster.
MK	Incident should be minor injury or loss of property and accident major loss of life or property.
D H	No. See above question
AM	Incident = potential for loss and consequent impact on infrastructure/economy of our country. Disaster = impact already obvious on infrastructure/economy
TS	Not aware of normal mechanisms. There should be guidelines. For example, when does a fire in an uninhabited area become a disaster - when lives/property are threatened.
WS	This varies greatly in interpretation.
MT	The Disaster management act, 57 of 2002 can be used to differentiate between the two.

In your opinion what would be the most important components of such an IMS?

JB	Control, communication, lines of reporting, setting up of and management of a JOC.
BC	Establishment of a national forum/training task force and to interrelate internationally.
MK	Simple easy reporting type system
DH	From a road point of view - the safe, quick restoration of the road service.
AM	Single point of contact. Responsibilities/check lists.
TS	Similar to National Disaster Management.
WS	Agency commitment
MT	A framework (paper) with guidelines/contingency plan will be most NB - with a role player's contact no's.

2. Extent of application in SA

From your experience, to what extent would you say Incident Management is currently practiced in South Africa?

J B   By and large it is practiced and used by the major emergency services (fire and EMS) in the larger cities.

BC   Moderately

MK   Not as much as it should be in my opinion, however I am not experienced or qualified enough to give credible answer.

D H   Low

AM   Is practiced, but needs to be formalised better in some cases.

TS   The old civil protection structures have not been replaced.

WS   In theory it is practiced a lot, but not in practice.

MT   The necessary role-players are involved and was for example before the cricket at Newlands - went of well.

Is there a particular existing IMS that you are familiar with which you would recommend for South Africa? If so please name/describe it.

J B   No

BC   *

MK   I don't think I am at liberty to divulge this information at this stage.

D H   The USA, and I believe Australia, have several where they have learnt the same lessons, and applied it.

AM   SASAR Manual is a "systems approach" based on Internationals standards.

TS   Also based on National Disaster Management

WS   *

MT   None

From your experience are there standard procedures for the *routine* establishment of an Incident Command Post at the scene of every incident and if so, are the procedures common to all response agencies nationally?

J B   Yes and no

BC   Not always, some places in S.A. do not have any contingency plan.

MK   I assume you mean accident when you say incident? If so then yes would by my answer. But no for a minor incident. Nationally the response procedures are generally similar as agreed by the involved agencies.

D H   a.k.a. Forward control point. Yes, and yes. i.t.o. road/freeway IMS's.

AM   No, and commonality is not very apparent.

TS   No structured procedures.

WS   Yes

MT   Yes, as far as I'm aware of.

From your experience are there clear uniform guidelines setting out the criteria for the establishment of a Joint Operations Centre and if so, are they applicable to all response agencies nationally? If not, should there be?

J B   Yes for specific services and yes
BC   The major centres may have guidelines, but often "kept in a closet: Most definitely.
MK   *
D H   No, I can't comment i.t.o. nationally
AM   Where SANDF is involved. Yes. Otherwise varied.
TS   No clear guidelines. There should be clear guidelines
WS   Yes
MT   This will differ from incident to incident. There should still be the necessary guidelines and contingency plans.

From your experience of major incidents in which you have been involved, how has the absence or presence of the standards described in 4 above affected the management of the incident either positively and/or negatively?

J B   Both, often the wrong agency has taken control and this has lead to confusion.
BC   Poor communications, land to air or land, air to sea. The assumption of responsibility creates organised procedures.
MK   *
D H   It has worked both ways. By keeping it simple, problems are resolved quickly.
AM   Invariably, the military take control as they have a more structured, disciplined approach.
TS   No negative effects in E/cape scenario. Would occur if co-operation was poor.
WS   Many chiefs but to little action
MT   The presence definitely helped it positively. It helps with the time factor as well.

3. Responsibility/Leadership

From your experience are there clear guidelines regarding the allocation of responsibilities for management of incidents? If not, should there be

J B   No and yes
BC   There may be but they are not put into practice. Definitely.
MK   *
D H   Yes
AM   I believe Provincial Disaster Management should allocate as required by situation.
TS   No clear guidelines, there should be clear guidelines
WS   Yes
MT   I don't think that the guidelines are always set out clearly. Although some role-players do have guidelines.

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Should a single agency be identified which will always 'take charge' at all incidents?

J B   No

BC   No. People with the correct knowledge and experience are to work together.

MK   Yes, I think so as will not then result confusion as to who is in charge. In aircraft indents/accidents the SAPS take charge and treat the scene as a crime scene.

D H   No

AM   No, depends on the scenario (most suited)

TS   Ideally the ECESCC under John Best (SAPS) is a good example

WS   No - depends on type of incident.

MT   Yes, it needs to come from different agencies, which must work together, but one agency must take charge.

Note: Also relates to authority cluster

If so which agency should this be? -please motivate your response.

J B   n/a

BC   Maritime persons for sea and ships, aviators for aviation together with medical and fire.

MK   SAPS, as they are best trained to deal with acts caused with malice intent.

D H   *

AM   *

TS   SAPS. Who ever does it must be legally mandated.

WS   n/a

MT   The Provincial Disaster Management Agency

Note: Also relates to authority cluster

If not, how should responsibility for Incident Command be allocated?

J B   The service or organisation that has biggest or most work to do should be the incident command.

MK   As above. The experts are to command the respective service but to utilise other necessary support.

DC   *

D H   As described in question on difference between Incident Management and Incident Command.

AM   By sub-centre or National centre as required.

TS   Per area under municipal councils

WS   According to the primary response agency.

MT   *

Note: Also relates to authority cluster

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4. Legal Authority

Would it be necessary to legislate a national system and if so why? If not, why not?

J B	Yes, because it is the only way that it could be forcefully implemented.
BC	Legislation can cause hurdles but on the other hand organisations need "go ahead authority"
MK	*
D H	Not at all recommended. Legislation's interpretations is a major cause of existing problems.
AM	Yes, but must have official sanction of government.
TS	Guidelines should be legislated and enforced on local councils.
WS	Ego's
MT	Disaster Management is legislated, why not Incident Management as well?

Which agency do you believe should take the lead in the development of a system for Incident Management for South Africa and why?

J B	No idea.
BC	SA services are very fragmented at the present. The creation of a national organisation. (e.g. Coast Guard)
DC	Disaster Management
D H	It depends "on size" will not "fit all" applications
AM	Department of Transport - invariably involves them.
TS	Possibly National Disaster Management together with SAPS.
WS	Disaster Management
MT	Cape Metropole Council. They've got expertise.

Questionnaire and analysis of Quantitative Study using Attitudinal Test
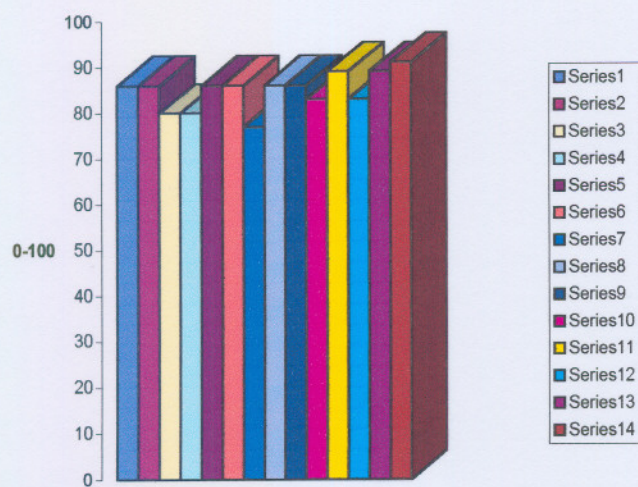
RELEVANCY TEST

The relevancy test consisted of 14 statements to which each respondent was invited to indicate on a scale of 5 to 1, the extent to which they agreed or disagreed with the statement. An example of the questionnaire is on page 158 of this report.

The results for each individual statement were calculated as a percentage of the greatest possible total for each statement and captured in the bar chart on page 157.

The overall result of the relevancy test was 85,3%.

Each series refers to a statement posed in the attitudinal test and is numbered according to the number of the question used in the questionnaire. The questionnaire appears on page 158.

Results of quantitative relevancy test

A Multi-agency Response Management System for South Africa

Survey to test the relevance of the model
Sample questionnaire

Series	The model:	Agree strongly 5	Agree 4	Unsure 3	Do not agree 2	Strongly disagree 1
1.	is comprehensive in terms of the scope of its application					
2.	provides clear definitions of terminology					
3.	clearly defines roles					
4.	clearly defines the span of management					
5.	provides clear communication mechanisms for information sharing					
6.	provides clear parameters for reporting					
7.	clearly defines scope of authority					
8.	provides clear triggers for escalating to higher levels of response management					
9.	describes realistic levels of response management for the South African environment					
10.	covers the key elements necessary to enable a natural escalation to higher levels of response management					
11.	follows a logical sequence					
12.	is practically implement able					
13.	establishes the foundation on which a comprehensive response management system can be built					
14.	could contribute to the development of a basic training model for inclusion in the curricula of response agency personnel					

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