



A FRAMEWORK FOR MAJOR EMERGENCY MANAGEMENT



WORKING DRAFT

GUIDANCE DOCUMENT 7

A GUIDE TO COMMUNICATIONS
SYSTEMS (TECHNICAL)

Please Note that, as the Technical Communications infrastructure used by the Principal Response agencies is subject to ongoing change and development, this Guide has to be read, in that context, as a living document, subject to ongoing change.



INTRODUCTION TO A GUIDE TO COMMUNICATIONS SYSTEMS (TECHNICAL)

‘A Framework for Major Emergency Management’ (2006) replaces the *Framework for Co-coordinated Response to Major Emergency*, which has underpinned major emergency preparedness and response capability since 1984.

The Framework sets out the arrangement by which the principal response agencies will work together in the management of large-scale incidents.

This *Guide to Communications Systems (Technical)* is intended to support the Framework text and to provide additional guidance on arrangements for emergency service communications in the event of a major emergency.

This document is presented as a working draft and as such it is requested that comments and observations are fed back to the national level. Comments should be addressed to:

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1: INTRODUCTION

Background

The 2006 Framework for Major Emergency Management puts in place arrangements that will enable the three Principal Response Agencies, An Garda Siochana, the Health Service Executive and the Local Authorities, to effectively co-ordinate and manage their efforts whenever a major emergency is declared.

Diagram 1, which is taken from the Framework, sets out the overall architecture for the co-ordinated response and illustrates both the Command, Control and Co-ordination Levels of the response and the associated information flows. As outlined in the diagram, there are numerous lines of communication required, to facilitate the flow of information between the various elements of the co-ordinated response.

Section 5.4.7.3 of the Framework sets out the requirements in respect of Communication Systems (Technical) including:

Each element of the principal response agency (including its emergency services) relies on technical communications facilities to enable it to function and for different units to communicate, both at the site and between the site and its command, control or communications centre.

Communication systems serve command structures within services and it is neither necessary nor desirable that there is inter-agency radio communication at all levels. However, it is critical that robust arrangements for inter-agency communication on site(s) are provided for at Controller of Operations level as a minimum.

Facilities are also required to provide resilient communications between sites and Local Co-ordination Centres. Individual services will also need to be able to communicate with their own crisis management centres.

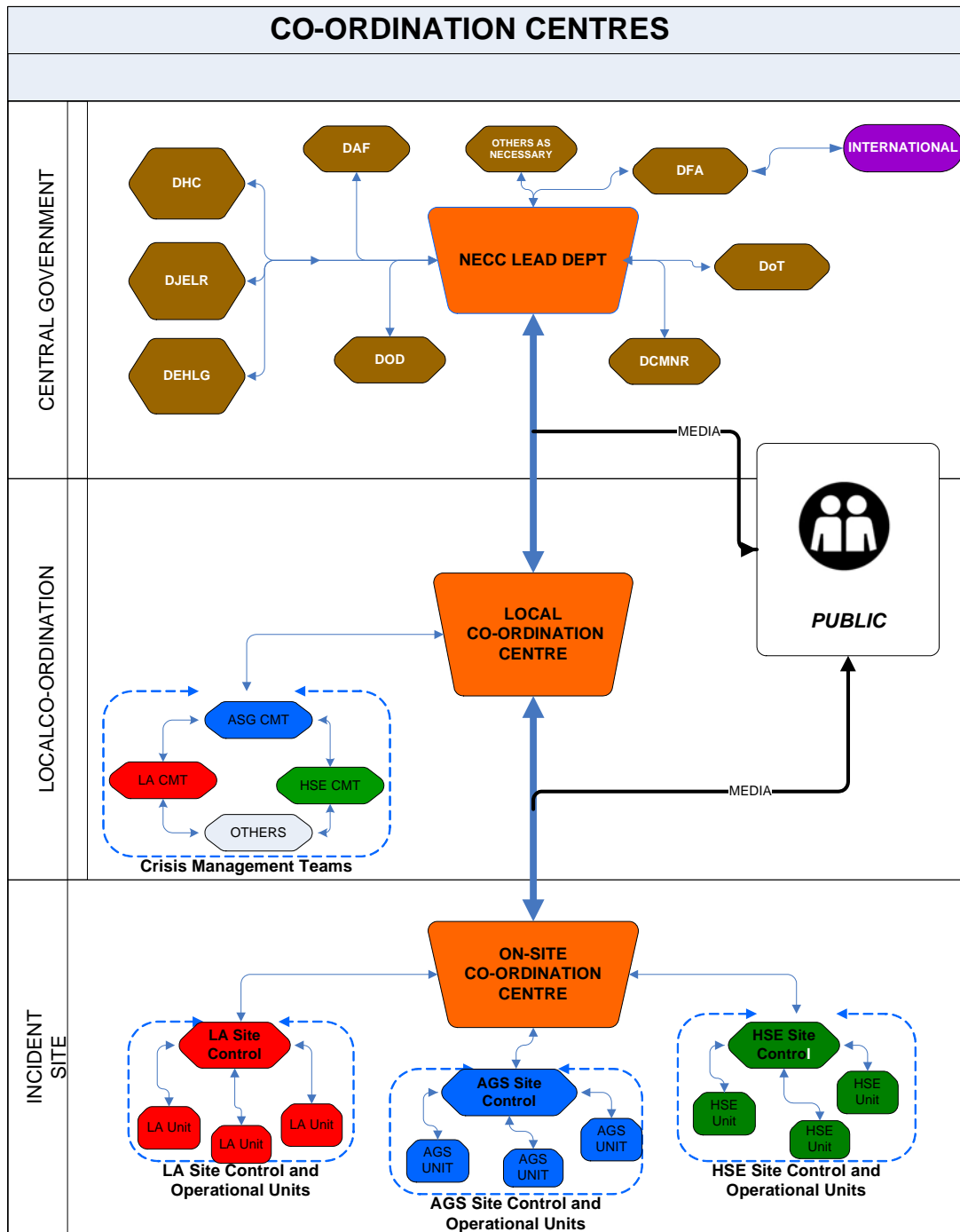


Diagram 1- Schematic Diagram Illustrating Command, Control and Co-ordination Levels and Information Flows

(Figure 5.1 of the Framework)

Key PRA Groups and Centres

In the event that a major emergency is declared, the Major Emergency Plans of the relevant Principal Response Agencies (PRAs), the Garda Division, the HSE Area and the Local Authority, will be activated and resources will be mobilised and deployed in accordance with those plans.

An Garda Síochána, the Ambulance Service (on behalf of the HSE) and the Fire Service (on behalf of the Local Authority) will usually be first representatives of the PRA to arrive at the site and each PRA will eventually establish its own Site Control Point. The first response vehicle from each agency that arrives at the scene will become the Control Point of that agency and dedicated Incident Command/Control vehicles will take over the control function when they arrive. Where possible, the Control Points of the three PRAs should be co-located to form the Site Control Point.

Once the Lead Agency is determined, the On Site Co-ordination Group, comprising the three Controllers of Operations, will meet in the On Site Co-ordination Centre (located at the Site Control Point).

Away from the site, the Crisis Management Teams of An Garda Síochána, the HSE and the Local Authority will assemble in pre-determined centres, and the Lead Agency will establish the Local Co-ordination Centre, where the Local Co-ordination Group will meet.

The Local Co-ordination Centre will be located in a facility controlled by one of the PRAs and the other two PRAs involved in the response will be required to send representatives to that centre. (For example, where the Local Co-ordination Centre is located in the HQ of the Local Authority, representatives from the relevant Garda Division and HSE Area will be required to attend there.)

Each PRA involved is required to notify its parent Government Department of every major emergency declaration, as part of its mobilisation procedures.

Depending on the nature and scale of the major emergency, a Lead Government Department may be nominated and, if considered appropriate, an Inter-Departmental Emergency Response Co-ordination Group, chaired by the Lead Department, will be activated. This group will meet in the National Emergency Co-ordination Centre, Kildare Street, or other appropriate facility.

2: KEY PRA COMMUNICATION LINKS

Introduction

All of the groups and centres listed in Section 1 can work effectively only if there is a free flow of information in both directions between all key nodes, as illustrated in Diagram 1.

These information flows can be divided into two main groups, as follows: those that are internal to An Garda Síochána, the HSE and the Local Authorities; and those which are inter-agency.

Note: During a major emergency, mobile telephones may be used by victims, the public, the media and the staff of the PRAs and, where they work, they can be extremely useful, particularly in facilitating early notification of an incident by the public to the emergency services. Laptop computers can also be used to send emails via the 3G Network. However, experience shows that in most major emergencies, mobile telephone networks quickly become overloaded and, therefore, mobile telephones cannot be relied upon. For that reason, they are not included in this Guide.

Internal Garda Síochána Communications

Garda Síochána units operating at the site of a major emergency will need to communicate with one another and with the Garda Site Control Point. At present, the standard system in place for this communication is TETRA and analogue VHF (where TETRA has not been rolled out).

Garda Síochána units which are involved in the major emergency response, but are distant from the site of the major emergency (such as units at an outer traffic cordon), will need to communicate with Garda Divisional Control. At present, the standard system in place for this communication is TETRA and analogue VHF (where TETRA has not been rolled out).

Garda Site Control will need to have a communication link with the Garda Divisional Control and the Garda Crisis Management Team. At present, the standard system in place for this communication is TETRA and analogue VHF (where TETRA has not been rolled out). In the event of a failure of this system, resilience will be provided by means of satellite telephones.

The Garda Crisis Management Team will need to have a communications link with the Garda representatives at the Local Co-ordination Centre. The likely requirement here is for one or two channels carrying voice traffic, plus email and web access. At present, the standard system in place for this communication is the PSTN system. In the event of a failure of this system, resilience will be provided by means of satellite telephones.

Internal HSE Communications

HSE units operating at the site of a major emergency will need to communicate with one another and with the HSE Site Control Point (Mobile Command Unit). At present, the standard system in place for this communication is the Ambulance Service UHF analogue radio system, with hand held units. There is a facility within Ambulance Service vehicles to re-broadcast UHF voice traffic from this system via the Ambulance Service VHF analogue radio system.

HSE Site Control will need to have a communication link with Ambulance Control and the local HSE Crisis Management Team. At present, the standard system in place for this communication is the Ambulance Service VHF analogue radio system. In the event of a failure of this system, resilience will be provided by means of satellite telephones.

Ambulance Service units which are involved in the major emergency response, but are distant from the site of the Major Emergency (such as ambulances bringing casualties to hospitals), will need to communicate with Ambulance Control. At present, the standard system in place for this communication is the Ambulance Service VHF analogue radio system.

Any activation of the HSE Major Emergency Plan is notified by text message to the members of the HSE Crisis Management Team and their alternates, who are invited to participate in an initial teleconference. Information on the major emergency will be provided to the Crisis Management Team during this teleconference and a decision to hold further teleconferences, or to meet in the local Crisis Management Team Centre, will be taken during that teleconference. In the event of a failure of the SMS system, members of the Crisis Management Team will be contacted by telephone.

The HSE Crisis Management Team will need to have a communications link with the HSE representatives at the Local Co-ordination Centre. The likely requirement here is for one or two channels carrying voice traffic, plus email and web access. At present, the standard system in place for this communication is the PSTN system. In the event of a failure of this system, resilience will be provided by means of satellite telephones.

Internal Local Authority Communications

Fire Service and other Local Authority units operating at the site of a major emergency will need to communicate with one another and with the Local Authority Site Control Point (Incident Command Unit). At present, the standard system in place for this communication is the Fire Service UHF radio system, with hand held units.

To achieve “in building” coverage, the Fire Service uses a rebroadcast channel (UHF Channel 4) to connect to the VHF network. This channel should only be used when “in building” or where enhanced coverage is required. Users should be aware that where more than one rebroadcast repeater is enabled at an incident site, radio interference will occur.

Civil Defence units which are mobilised to assist in a major emergency will need to communicate with one another, with their own Incident Command Unit, and with the Local Authority Site Control Point. At present, the standard systems in place for this communication are the Civil Defence UHF radio system, with hand held units, and the Civil Defence VHF radio system.

Other Local Authority services which may be mobilised to assist in a major emergency, including Water, Transport, Roads, Housing and Environment services, normally use GSM mobile telephones as their primary mode of “out of office” communication although some Local Authorities still maintain VHF radio systems to support some of these services. Any units of these services which are operating at the site of a major emergency will communicate with the Local Authority Site Control Point by physically reporting there or, where this is not possible/practical, a Fire Service Radio Operator will be provided.

Local Authority Site Control will need to have a communication link with the Local Authority Headquarters and the Local Authority Crisis Management Team. At present, the standard system in place for this communication is the Fire Service VHF analogue radio system. In the event of a failure of the system, resilience will be provided by means of satellite telephones.

Local Authority units which are involved in the major emergency response, but are distant from the site of the major emergency (such as Road Service units), will need to communicate with the Local Authority Headquarters and the Local Authority Crisis Management Team. At present, the standard system in place for this communication is the GSM mobile telephone system.

Where the Local Co-ordination Centre is not in its HQ, the Local Authority Crisis Management Team will need to have a communications link with the Local Authority representatives at the Local Co-ordination Centre. The likely requirement here is for one or two channels carrying voice traffic, plus email and web access. At present, the standard system in place for this communication is the PSTN system. In the event of a failure of this system, resilience will be provided by means of satellite telephones.

Inter-Agency Communications at the Site

During the early stages of a major emergency response, when units from An Garda Síochána, the Ambulance Service and the Fire Service are operating at the site, but before the On Site Co-ordination Centre has been established, it is important that the three Controllers of Operation should be in a position to communicate effectively with one another. In some situations, where the nature of the incident and the geography of the site allow, the Controllers of Operations may be able to operate in close proximity to one another. However, in other situations, radio communication between the three Controllers of Operations may be necessary.

To facilitate this communication (pending migration of all PRAs to TETRA), the Fire Service will bring to each major emergency site a set of four UHF, hand held, radios and one of these will be provided each to the Controllers of Operations of An Garda Síochána and of the HSE. The Fire Service has designated a frequency for these radios for major emergency use – UHF SIMPLEX **466.550**, designated **channel 10**.

Inter-Agency Communications off Site

Once the Lead Agency has been determined, its Crisis Management Team will begin the process of activating the Local Co-ordination Centre and the Local Co-ordination Group. The Local Co-ordination Group can be activated by means of telephone calls to individual members, and their alternates, and/or by means of an SMS text alerting system.

The Local Co-ordination Group can meet initially at the designated Local Co-ordination Centre or, alternatively, can meet initially by teleconference. When the teleconference option is used, information on the major emergency will be provided to the Local Co-ordination Group during the initial teleconference, and a decision to hold further teleconferences, or meet in the Local Co-ordination Centre, will be taken during that teleconference.

Once the Local Co-ordination Centre has been established, the communications link between the On Site Co-ordination Centre and the Local Co-ordination Centre will be a critical element supporting the effective management of the major emergency. This communication link will be provided by the Lead Agency.

This link will be used to transfer not only general descriptive information but also, as far as possible, the contents of the on-site Information Management System. To facilitate that process, the likely minimum requirement here is for two channels carrying voice traffic plus, where possible, email and/or a data link. At present, the standard systems in place for this communication are:

- Where the Local Authority is the Lead Agency, the Fire Service VHF radio system. In the event of a failure of this system, resilience will be provided by means of satellite telephones.
- Where An Garda Síochána is the Lead Agency, TETRA will be used or analogue VHF (where TETRA has not been rolled out). In the event of a failure of this system, resilience will be provided by means of satellite telephones.
- Where the HSE is the Lead Agency, the Ambulance Service VHF radio system. In the event of a failure of this system, resilience will be provided by means of satellite telephones.

Note:

As each PRA migrates on to the TETRA Network it will be essential to ensure optimum indoor coverage in all designated Local Co-Ordination centres.

Inter-Agency National Communications Link

Once the Lead Government Department has been identified, it will be responsible for making contact with the Local Co-ordination Group. At present, the standard system in place for this communication is the PSTN system, plus email and the web.

3. OTHER COMMUNICATION LINKS

Introduction

Section 5.6 and Appendix F13 of the Framework list the agencies and organisations which may be mobilised to support the three PRAs which are initially involved in the major emergency declaration. These include:

- Neighbouring Principal Response Agencies
- Specialist organisations, such as the RPII, the EPA and the HSA
- The Defence Forces
- The Irish Red Cross
- Voluntary Emergency Services
- Utilities
- Private Sector Organisations.

The mobilisation of any of the above agencies or organisations will require additional communications links and, for that purpose, they can be categorised into three groups:

- Neighbouring Principal Response Agencies,
- Organisations with stand alone communication systems, and
- Others.

Neighbouring Principal Response Agencies

Where a PRA mobilises assistance from a neighbouring region (another Garda Division, another HSE Area or another Local Authority) to the site of a major emergency, the responding units will normally report to and be tasked by the Controller of Operations of the PRA which mobilised them.

In the case of units of An Garda Síochána, they will need to communicate with one another and with the Garda Controller of Operations at the Site Control Point and the standard system in place for this communication is TETRA in the DMR and analogue VHF outside of the DMR.

In the case of units of the Ambulance Service, they will need to communicate with one another and with the HSE Controller of Operations at the Site Control Point and the standard system in place for this communication is the HSE analogue VHF radio system.

In the case of the Fire Services, they will need to communicate with one another and with the Local Authority Controller of Operations at the Site Control Point and the standard system in place for this communication is the Fire Services analogue VHF radio system.

Agencies with Stand Alone Communication Systems

The principal agencies which may be mobilised to a major emergency site and which have stand alone communication systems are:

- The Defence Forces, and
- The Voluntary Emergency Services.

Where Defence Force resources are mobilised to a major emergency site, they will provide a Liaison Officer to the On Site Co-ordination Group. This Liaison Officer will act as a conduit between the Defence Forces and the On Site Co-ordination Group. Defence Forces units operating at the site will need to communicate with one another and with the Defence Forces Liaison Officer. At present, the standard system in place for this communication is the Defence Forces VHF radio system.

Other Agencies and Organisations

Other agencies and organisations which are mobilised during a major emergency will communicate with the PRAs:

- At the site, either by
 - providing a representative to the On Site Co-ordination Group and/or
 - by means of a Radio Operator provided by one of the PESs
- Away from the site, either by
 - Providing a representative at the Local Co-ordination Centre and/or
 - By the PSTN, email and/or web.

4. CONTINGENCY COMMUNICATION ARRANGEMENTS

Introduction

Since the efficient flow of information between the various elements of a co-ordinated response is a key factor in any successful major emergency response, it is important that the possibility of communication system failure is considered and appropriate arrangements are put in place.

Resilient Services

Section 3.4.2 of the Framework requires Principal Response Agencies to consider the vulnerability of their own critical services, to assess the likely risks to these services and to identify the actions which promote resilience (Business Continuity Planning).

In this regard, each Principal Response Agency should, as part of its ongoing operations, ensure that its key communication systems are managed, maintained and updated, so as to ensure maximum reliability and resilience.

Note: one issue to be considered here is the need for a facility to recharge UHF radio batteries during a major emergency.

Alternative Technologies

Despite best efforts in this regard, communication systems may not always be available during a major emergency response. Systems can fail at the most inappropriate times and system availability can also be compromised by other factors.

For example, a VHF radio system may be unavailable due to extreme weather conditions, poor coverage in a remote area, or the loss of a VHF high site due to a prolonged power failure. Likewise, a UHF radio system may be compromised by interference from spurious radio data transmitters. Likewise, UHF hand held coverage is likely to be extremely limited (less than two hundred meters) in urban environments and mountainous terrain.

Principal Response Agencies need to consider back up arrangements, in the event of such a failure of key communication channels.

5. INTEROPERATION

As set out in Section 2, under Inter-Agency Communications at the Site, there is an arrangement in place by which the Fire Service will bring to each major emergency site a set of four UHF, hand held, radios and one of these will be provided to the Controller of Operations of an Garda Síochána and another to the Controller of Operations of the HSE.

When TETRA is rolled out across all of the emergency services, the capacity for inter-agency communications over TETRA will be available and protocols for such use of TETRA will need to be developed at that stage.

6. FUTURE DEVELOPMENTS

TETRA/NDRS

TETRA is a European ETSI standard for emergency service mobile radio, similar to GSM for mobile telephony. Tetra is implemented as a cellular network and is designed to provide high levels of radio coverage, resilience and functionality for emergency service radio users. TETRA radio networks have been rolled out in most European countries for emergency service and public service use.

Here the intention is that a National Digital Radio Service (NDRS) will be rolled out for emergency service use over the coming years and this NDRS will be provided by a TETRA radio network. This NDRS will provide a potential solution for on-site and off-site inter-agency communication in the future, subject to successful national network completion.

At present An Garda Síochána is the only agency operating on the TETRA NDRS and, as of Q3 2009, all Garda divisions in the DMR are using TETRA. It is anticipated that the

entire Eastern Region and the Louth Division (Northern Region) will be operational by the end of 2009 and the rest of the country will be completed by the end of Q1, 2011.

7. EXERCISES

It is important that all key PRA communication links are tested and exercised on a regular basis.

Live “on the ground” major emergency exercises should usually involve the exercising of communication links.

However, specific communication tests and exercises should also be included in the three year rolling programme of tests and exercises.