Australian Disaster Resilience Handbook Collection

MANUAL 14

Post Disaster Survey and Assessment

Australian Institute for Disaster Resilience

AUSTRALIAN DISASTER RESILIENCE HANDBOOK COLLECTION

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Manual 14

Australian Government
Attorney-General's Department

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The first publications in the original Australian Emergency Manual Series were primarily skills reference manuals produced from 1989 onwards. In August 1996, on advice from the National Emergency Management Principles and Practice Advisory Group, the Series was expanded to include a more comprehensive range of emergency management principles and practice reference publications.

In 2011, Handbooks were introduced to better align the Series with the *National Strategy for Disaster Resilience*. Compiled by practitioners with management and service-delivery experience in a range of disaster events, the handbooks comprised principles, strategies and actions to help the management and delivery of support services in a disaster context.

In 2015, the Australian Institute for Disaster Resilience (AIDR) was appointed custodian of the handbooks and manuals in the series. Now known as the Australian Disaster Resilience Handbook Collection, AIDR continues to provide guidance on the national principles and practices in disaster resilience in Australia through management and publication of the Collection.

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Australian National Disaster Resilience Handbook Collection (2011 –)

Handbook 1 Disaster health

Handbook 2 Community recovery

Handbook 3 Managing exercises

Handbook 4 Evacuation planning

Handbook 5 Communicating with people with a disability – National Guidelines for Emergency Managers

Handbook 6 National Strategy for Disaster Resilience – community engagement framework

Handbook 7 Managing the floodplain: a guide to best practice in flood risk management in Australia

- **Guideline 7-1** Guideline for using the national generic brief for flood investigations to develop project specific specifications
- **Guideline 7-2** Technical Flood Risk Management Guideline: flood emergency response classification of the floodplain
- **Guideline 7-3** Technical flood risk management guideline: flood hazard
- **Template 7-4** Technical project brief template
- **Guideline 7-5** Technical Flood Risk Management Guideline - flood information to support land-use planning
- **Guideline 7-6** Technical flood risk management guideline: assessing options and service levels for treating existing risk
- **Practice Note 7-7** Considering flooding in land-use planning activities

Handbook 8 Lessons management

Handbook 9 Australian Emergency Management Arrangements

Handbook 10 National Emergency Risk Assessment Guidelines *(plus supporting guideline)*

Guideline 10-1 National Emergency Risk Assessment Guidelines: practice guide

Handbook 11 *renamed Guideline 10-1 National Emergency Risk Assessment Guidelines: practice guide*

Handbook 12 *Spontaneous volunteer management*

Australian Emergency Management Manual Series

The most recent list of publications in the Manuals series includes 46 titles.

The manuals have not been reviewed since 2011 or earlier and the Manual Series is undergoing a review which will see relevant Manuals move into the Handbook Collection. Current and past editions of the Manuals will remain available on the AIDR Knowledge Hub at www.knowledge.aidr.org.au.

Manual Series Catalogue: 2004 - 2011

Manual 1 Emergency management concepts and principles (2004)

Manual 2 *Australian Emergency Management Arrangements (superseded by Handbook 9)*

Manual 3 Australian Emergency Management Glossary (1998)

Manual 4 Australian Emergency Management Terms Thesaurus (1998)

Manual 5 *Emergency risk management – applications guide (superseded by Handbook 10)*

Manual 6 *Implementing emergency risk management – a facilitator's guide to working with committees and communities (superseded by Handbook 10)*

Manual 7 Planning safer communities – land use planning for natural hazards (2002, currently under review)

Manual 8 *Emergency catering (2003, archived)*

Manual 12 Safe and healthy mass gatherings (1999)

Manual 13 Health aspects of chemical, biological and radiological hazards (2000)

Manual 14 Post disaster survey and assessment (2001)

Manual 15 Community emergency planning (1992)

Manual 16 Urban search and rescue – capability guidelines for structural collapse (2002)

Manual 17 Multi-agency incident management (replaced by AIIMS)

Manual 18 Community and personal support services (1998)

Manual 19 *Managing the floodplain (superseded by Handbook 7)*

Manual 20 Flood preparedness (2009)

Manual 21 Flood warning (2009)

Manual 22 Flood response (2009)

Manual 23 Emergency management planning for floods affected by dams (2009)

Manual 24 Reducing the community impact of landslides (2001)

Manual 25 Guidelines for psychological services: emergency managers guide (2003)

Manual 26 Guidelines for psychological services: mental health practitioners guide (2003)
Manual 27 Disaster loss assessment guidelines (2002)
Manual 28 Economic and financial aspects of disaster recovery (2002)
Manual 29 Community development in recovery from disaster (2003)
Manual 30 Storm and water damage operations (2007) (information may not be appropriate to all situations)
Manual 31 Operations centre management (2001)
Manual 32 Leadership (1997)
Manual 33 National Land search operations (2014) (refer to the Land Search Operations Manual website)
Manual 34 Road rescue (2009)
Manual 35 General and disaster rescue (2006)
Manual 36 Map reading and navigation (2001)
Manual 37 Four-wheel-drive vehicle operation (1997)
Manual 38 Communications (1998)
Manual 39 Flood rescue boat operation (2009)
Manual 40 Vertical Rescue (2001)
Manual 41 *Small group training management (1999, archived)*
Manual 42 *Managing Exercises (superseded by Handbook 3)*
Manual 43 Emergency planning (2004)
Manual 44 Guidelines for emergency management in culturally and linguistically diverse communities (2007)
Manual 45 Guidelines for the development of community education, awareness and education programs (2010)
Manual 46 Tsunami (2010)

FOREWORD

The purpose of this Manual is to provide emergency managers with a comprehensive guide to the survey and assessment of the initial impact of a disaster on the community and of needs for saving life and property and for community recovery. It is not intended to cover all aspects of the specialised surveys and assessments carried out by professional or sectoral experts, although the techniques discussed may be of use when planning and carrying out these activities.

The Manual describes procedures and techniques that apply up to the level of a 'worst case' scenario in which no survey and assessment capability survives within the affected community. The outlined procedures also provide a basis for the development of community level disaster survey and assessment systems.

Emergency Management Australia (EMA) has prepared the information in this Manual in conjunction with State and Territory emergency management/counter-disaster organisations. Details of the Manual's development and information sources appear in the Preface on page xi.

Proposed changes to the document should be forwarded to the Director General, Emergency Management Australia, at the address shown below, through the relevant State/Territory emergency management organisation.

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PREFACE

After a disaster or emergency has occurred, accurate information is needed to enable emergency managers to make fast decisions on response and recovery matters. The information includes details of the effects, or impact, of the relevant hazard, the needs of the affected community and the resources and organisations that have survived.

The required information may be provided by an established reporting structure in which each element is aware of the information needed and is able to collect and provide it in the required format and time period. If such a structure does not exist, is unaware of management information requirements or cannot provide the information because of casualties, damage or other circumstances beyond its control, there may be a need to establish a system that can collect the information. Such a system may rely on the response to standard questionnaires or on asking specific questions and recording responses. Alternatively it may deploy survey teams to actively seek information and consolidate it for assessment by emergency managers before they make decisions.

The Manual draws on experience in Australia and overseas, notably from manuals prepared by various United Nations agencies, non-government organisations and national agencies. It is designed for Australian conditions. While similar principles are used for assessment of overseas disasters, there are issues relating to international cooperation, assessment in complex emergencies, cooperation between the government of the affected country and external assessment teams as well as assessment of conditions in developing countries that are not addressed in the Manual.

Throughout this Manual the terms 'emergency managers' and 'emergency management' are used inclusively to cover both disaster and emergency management and events.

CHAPTER 1

INTRODUCTION TO POST–DISASTER ASSESSMENT

INTRODUCTION

1. Post-disaster assessment is a key process in the response and recovery stages of the emergency management continuum. Immediately after a hazard has affected a community, there is a need to identify what the impact has been and what needs to be done to ensure the safety of life and property and to return the community to normality. It is the task of an emergency management organisation to assess the overall impact of the hazard, identify and prioritise needs and to manage available resources to meet those needs as effectively as possible.

Information

2. These processes require information. In the early stages of an emergency or disaster, information may be scarce or it may be overwhelming. It will almost certainly be confused, fragmented, conflicting, biased, inappropriate, inaccurate or wrong. Decisions made on the basis of early information may be correct but this may be due to luck rather than judgement. Good decisions in emergency management, as in every other field, require accurate and comprehensive information, skilfully assessed and clearly presented. The availability of information and its quality will improve with time. Early decisions, made on the basis of limited information, can then be refined or changed if necessary.

Defining Assessment

3. Assessment is the organised process of collecting information after an emergency or disaster and processing it in order to estimate actual or expected casualties and damage and the needs of the affected community for response, recovery and future prevention and preparedness assistance.

PURPOSE

4. The purpose of post-disaster assessment is to provide emergency or disaster managers with a source of comprehensive, standardised information on the impact of a hazard. This information can be used to set priorities and make management decisions relating to the response to an emergency or disaster and to the initial steps leading to recovery.

Cautions!

5. The following cautions should be heeded:

   - ***Priorities***—*The response to urgent needs should never be delayed because a comprehensive assessment has not been completed.*

   - ***Assessment Fatigue***—*A noted phenomenon after many disasters is the onset among victims of what is often described as Assessment Fatigue. This occurs as repeated survey missions pass through a disaster-affected area with little or no apparent result. Little relief may have arrived (and there is always a good reason given for this!) but to victims there appears to be a plentiful supply of transport, funds and people available to examine and analyse the situation. Emergency services, specialist agencies, infrastructure providers, non-government organisations, research groups,*

academic institutions and others may all send survey missions. With the additional presence of visiting politicians and media teams, the area can appear to be crowded with outsiders. Since many of the visitors seem to ask the same questions again and again, any increase in frustration and anger among disaster victims is easy to understand. Those being questioned can become less cooperative and may, in extreme cases, become obstructive. It is this state that is referred to as Assessment Fatigue.

- *Emergency managers should be aware of the problem and try to rationalise the number of survey teams entering the affected area. Many of the teams will be seeking information that they do not think they can obtain in any other way. Good information management that encourages information sharing, open discussion and free distribution of authoritative reports through recognised channels can reduce the number of survey missions significantly. Participation of a range of agencies in joint survey teams can also be beneficial.*

- ***Survey Team Stress**—Surveying can be a stressful activity. Members of survey and visual inspection teams, particularly those sent out immediately after a major disaster, may see dead, injured and sick people of all ages. They may meet people who are traumatised by their experiences and are angry, confused, demanding or dependent. Survey teams are rarely equipped to deal with all these problems. They may wish to assist and face the dilemma that using their own supplies could compromise their task and have an adverse effect on the whole relief operation. In these circumstances they will have to report the situation then continue the survey task.*

  - *Survey teams may spend long periods inspecting damage in difficult conditions and this in itself can be depressing. Damage to homes that exposes aspects of everyday life can be particularly stressful to some while the scale of damage in a major disaster can seem overwhelming to those unfamiliar with such events.*

  - *The conditions under which survey teams operate may also contribute to stress, especially if they spend long hours with limited food and drink and/or living in basic accommodation.*

  - *Subsequent survey teams may find themselves under continuous pressure to explain the progress of the response or to speculate when particular forms of assistance will arrive.*

  - *If the survey process has involved dealing with massive death and destruction or has been stressful for the survey team in other ways, this should be discussed supportively during the operational debriefing. If team members experience severe or persisting distress, appropriate care should be made available, with specialist counselling if required.*

THE POST–DISASTER ASSESSMENT PROCESS

6. Post-disaster assessment is an on-going process that proceeds through a series of stages. While the sequence in which the process is carried out may be varied according to circumstances and available resources, it will probably include all of the elements shown in the diagram below. Each element of the process may be repeated as required by the disaster management system, while different elements may be carried out by different groups of people.

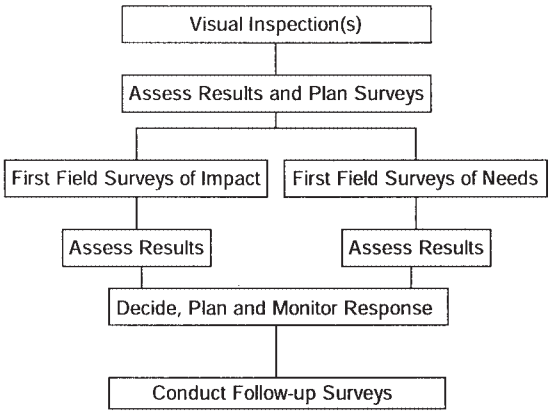

Figure 1–1: The Post-Disaster Assessment Process

ELEMENTS OF POST–DISASTER ASSESSMENT

7. Post-disaster assessment may include any or all of the following elements:

- Definition of the extent of the area affected by a hazard.
- Identification of the various ways in which a hazard has affected a community or communities and the ability of those affected to cope with the situation. Human, material, social and environmental impacts may be included.
- Identification of the most vulnerable members of the affected population.
- Identification of the most urgent needs and the areas in which those needs are greatest.
- Identification of secondary (or consequent) hazards and the measures needed to prevent or reduce their impact.
- Collection of information on infrastructure availability and immediate repair needs.
- Identification of surviving resources that may be used to relieve the situation.
- Identification of the availability and capacity of community structures through which assistance can be provided.
- Assessment of the transport and communications infrastructure needed for response operations and their availability.
- Assessment of the condition of any key assets and installations previously identified as vulnerable.
- Collection of any special information required by the organisation managing the response and recovery measures.

- Resolution of conflicting information.
- Collation of information and its presentation in forms that meet user needs.

8. Information collected and analysed during the initial assessment becomes baseline data with which later information can be compared during response and recovery. As well as collecting new information, later assessments should identify changes to the situation and assess the effectiveness of response measures.

ASSESSMENT TYPES

9. The two basic types of assessments are:
   - impact assessments; and
   - needs assessments.

Both types of assessment can be conducted concurrently.

Impact Assessments

10. Impact assessments examine the ways in which the hazard has affected the community or communities. Impact assessments provide:
    - communities and disaster managers with information on the scale and characteristics of the impact and the environment in which response assistance will need to be provided;
    - planners, governments, specialised agencies and communities with the basic information needed to carry out strategic planning for the recovery from disasters;
    - emergency managers and others with information that needs to be considered in the development of prevention and mitigation strategies; and
    - scientists with information that can extend their understanding of hazard characteristics and their impact on the physical environment.

11. The type of information that needs to be processed during impact assessments will vary with the hazard, the severity of the impact, the complexity of the community and the area to be assessed. It will also vary according to the amount and accuracy of **baseline information** with which it can be compared.

12. When compiling impact assessment information, where possible, casualty reports should list adults and children separately. The information gathered can include:
    - the area affected, by geographical location and size (with breakdowns into areas of severity if appropriate);
    - the major causes of casualties and damage;
    - human effects and casualties including the number of:
      - people affected;
      - dead (and whether deaths are continuing);
      - injuries and types (major or minor) and illnesses;
      - people missing;

  - people who have had to evacuate or have been displaced and the places to which they have moved; and
  - people homeless or requiring shelter or evacuation.
- damage including:
  - details of the homes destroyed or damaged;
  - details of the key community buildings destroyed or damaged;
  - details of other buildings destroyed or damaged, including commercial premises and suppliers of basic necessities to the community;
  - to lifelines and other key infrastructure;
  - that to transport systems;
  - that to agriculture and food supply systems; and
  - that to key local economic resources such as industrial premises;
- identification of secondary hazards that may pose a threat in the immediate future;
- sources, availability and purity of water for drinking and other purposes;
- environmental health and sanitation threats;
- availability of food supplies at family and community level;
- available medical staff, facilities and supplies within the affected area and their activities;
- resources that have survived the disaster and might be usable in the response;
- the capacity of local government and emergency management structures to manage the local response and recovery; and
- government, community and other organisations operating in the area and their activities.

Needs Assessments

13. Needs assessments deal with the type, amount and priorities of assistance needed by an affected community after a disaster or emergency. Their purpose is to identify:

- needs of the affected community or communities to save and sustain life and reduce the risk of further damage and provide an indication of their urgency;
- needs that can be met from within the affected community and those that can only be met with outside assistance; and
- specialised needs of the affected community for recovery, the resources available to meet those needs from within the community and the external assistance that may be needed.

14. Rapid identification and prioritisation of needs can significantly reduce casualties and streamline the response to disasters as well as laying an early foundation for recovery. While some needs may be anticipated or assumed in the early post-disaster period, when information is limited, early action is needed to validate these assumptions and assess the capacity of the affected community or communities to meet the needs from available resources.

15. The information that should be sought during a **needs assessment** immediately after a disaster may include the personnel, resource and equipment requirements for:

- search and rescue;
- medical evacuation;
- evacuation of survivors;
- medical and health support;
- environmental health;
- water supply and purification;
- shelter (including clothing, furniture etc);
- human (and animal) food (including storage, cooking, delivery etc);
- restoration of lifelines; and
- delivery of assistance.

16. A **needs assessment** should also identify the scale of assistance needed and make recommendations on priorities.

17. Recovery needs will normally require detailed assessment at a later stage. The assessments will be more specialised and separate assessments may be carried out for each sector. The information that such assessments should cover is best defined in conjunction with managers from the relevant sectors. Teams of professional or skilled personnel are usually used to carry out recovery needs surveys.

ASSESSMENT SECTORS

18. When managing the large amount of information that can be received and obtained by emergency managers after a major event, it is helpful to categorise impacts and needs into sectors that accord with the main response disciplines. These may differ according to the type of event, the community characteristics and the intensity of the impact. A typical sectoral breakdown used by many agencies is:

- search and rescue (including evacuation);
- medical and health (including environmental health);
- shelter (including clothing and domestic needs);
- water and sanitation;
- food;
- lifelines and critical facilities (including the supply chain);

- agriculture; and
- security of the population and property (when there is a possible risk).

THE STAGES OF ASSESSMENT

19. There are six basic stages of assessment:

- preparedness and planning;
- information gathering;
- collation;
- analysis;
- reporting; and
- monitoring.

20. This manual covers the preparedness, planning and information-gathering stages of assessment. **Procedures for collation, analysis, reporting and distribution of the results of that analysis and monitoring of changes to information should be included in operations centre and agency operating procedures.**

DATA AND INFORMATION

21. Data becomes information when it is useful, meaningful, relevant and understandable to particular people at particular times and for particular places. In order to become information, data must at least be:

- accurate;
- timely (and updated as often and regularly as necessary);
- available (to the people who need it); and
- collected and sorted into appropriate categories and forms.

Accuracy of Data and Information

22. After a disaster, when a great deal of conflicting information can be circulating, emergency managers must try to decide which of the reports are most likely to be true. At all stages of information collection, even in daily life, it is necessary to judge the validity of information received. The judgement will take account of the reliability of the source and the credibility of the information itself. A system for validating reports can be valuable for internal use and to qualify assessments. Even the most reliable source can sometimes be wrong while the most unreliable source may sometimes be right!

Source Reliability

23. As part of the preparation for disaster response, it may be useful to develop a **reliability index**. Incoming reports can then coded to indicate the perceived reliability of the source. The basis of the index would be experience. The reliability of previously used sources is likely to be known while the reliability of some sources may be higher because of their status, technical expertise or experience. Some sources may be considered reliable for certain information but unreliable or biased in relation to other information. Finally, some sources may be unknown so their reliability cannot be judged.

24. A typical **reliability index** is as follows:

A. Completely reliable
B. Usually reliable
C. Fairly reliable
D. Not usually reliable
E. Usually unreliable
X. Reliability cannot be judged

Information Credibility

25. As a further guide to the validity of information, it may be valuable to establish a **credibility index**, which indicates the likelihood that a particular item of information may be true (or at least partly so).

26. A typical **credibility index** is as follows:

1. Confirmed by other sources
2. Probably true
3. Possibly true
4. Doubtful
5. Improbable
0. Truth cannot be judged

Use of the Indices

27. When assessing incoming information, the two indices can be used to validate either a whole report or individual items. For instance, after a powerful windstorm, a report may be received from a local council that a particular shopping centre has been 'destroyed'. While the source is usually reliable (B) the information may be a little incredible since there can be a tendency to exaggerate in early reports. If the disaster manager considers that destruction is possible but major damage is more likely, the information could be coded 'B3'. Other items in the report, for instance that there has been major damage to house roofs, may be 'B2' or even 'B1' if confirmed by other sources.

POINTS TO NOTE

28. Major points to note in relation to post-disaster assessment are as follows:

- Data is simply a collection of words, numbers and symbols. Data becomes information when it is useful, meaningful, relevant and understandable to particular people at particular times and places for particular purposes. To other people, at other times or in other places, it remains data and may be meaningless.
- Most reports will be repetitive.
- Timing is vital. Without a time reference, assessment information has limited value.
- Information changes with time so an assessment is only accurate for the time at which it is conducted.

- The significance of particular information can change with time.
- Identifying developing trends may be as important as detailed reporting.
- What cannot be seen may be as important as what can be seen.
- The first assessment should be used to guide the subsequent collection and analysis process.
- The initial assessment should provide information that feeds directly into the planning process.
- Good decision-making requires good information.

CHAPTER 2

PREPAREDNESS AND PLANNING

INTRODUCTION

1. Quick and accurate assessment requires thorough preparatory work. During the normal planning process, emergency managers should be able to identify the most significant information required after a disaster. Emergency response and recovery plans should cover survey and assessment procedures, identification and training of assessment teams and establishment of effective systems for processing and communicating information collected.

2. In developing post-disaster assessment systems, managers should seek the participation of survey specialists, statisticians, representatives of the major sectors to be assessed and people with local knowledge of areas in which disasters are likely to occur.

STAGES IN DEVELOPING AN ASSESSMENT PROCESS

3. Developing an effective assessment system requires an organised approach. It is necessary to:

   - identify the information users;
   - identify the information needs;
   - agree standard terminology;
   - identity survey/data collection methods;
   - select survey methods;
   - design/print survey forms and consider requirements for teams;
   - establish systems for collating and analysing survey reports; and
   - collect or source baseline information.

IDENTIFYING THE USERS

4. The prime purpose of post-disaster assessment is to assist those responsible for effective management of the response and recovery processes. Information users can be identified from response and recovery plans and by identifying other agencies likely to become involved. Assessment information will also be useful to others, including the media and the general public, particularly in the affected area. It should be made available to them subject to constraints of confidentiality, time and workload.

5. An assessment system designed to meet all the needs of this range of clients would be complex and cumbersome but a properly designed process can meet the key and common needs.

IDENTIFYING INFORMATION NEEDS

6. Emergency managers need to identify clearly what information is vital, what is useful background or supporting information and what can be ignored. Identifying these needs during planning will save time and effort at the response stage. Needs must be rationalised, prioritised and sorted into those that must be obtained by survey and those that can be obtained in other ways. The lists in Chapter 1 will assist in this process. Procedures for obtaining information best collected from other sources or by specialists, can be developed separately.

7. The pre-prepared list should be reviewed early in each event so that additional items can be added and irrelevant items removed. Survey needs can then be reviewed and prioritised. Initial surveys should concentrate on 'vital' information that cannot be found in other ways. Detail or information that is 'nice to know', but not essential for effective decision-making, should be given a lower priority.

STANDARD TERMINOLOGY

8. Standard terminology is often a problem in emergency management because of different understanding of the same words by users from different professional backgrounds. In post-disaster assessment, it is important to agree definitions of key terms when developing an assessment system. The areas in which most misunderstandings arise are in connection with basic descriptive terms relating to casualties and damage. Terms like 'serious injury', 'minor injury', 'missing', 'destroyed', 'major damage' or 'minor damage' mean different things to different people.

9. Everyone in the disaster management system should use standard terms and understand their meanings. The number of standard terms should be kept to a minimum but they must be accepted and used by all involved in the assessment and management process. If no standard terms for casualties and damage have been determined, suggested terms and definitions are detailed in paragraphs 10 and 11.

Casualties

10. These are defined as follows:

- ***Dead***—Body sighted and confirmed as showing no sign of life.
- ***Missing***—People last seen in circumstances that indicate that they may have died but this cannot be confirmed **or** people known to have been in the affected area who cannot be traced, **or** people who cannot be accounted for when survivors and casualties are compared with known population numbers. (**Note:** Statistics in this category often change rapidly after a disaster).
- ***Seriously Injured***—Patient has major incapacitating injury requiring urgent and continuing medical assistance.
- ***Slightly Injured***—Patient with an injury that may need medical treatment but the person is able to resume some measure of normal activity after treatment.
- ***Uninjured***—Person who is unhurt or has suffered only minor cuts and bruising that does not restrict normal activities.
- ***Sick***—Patient showing the symptoms of a recognised form of illness (whether or not related directly to the emergency) but otherwise uninjured.

Damage

11. Degrees of damage are defined as follows:

- ***Destroyed***—Completely destroyed or so severely damaged that it must be destroyed as unsafe or unrepairable.
- ***Severely Damaged***—Damaged to such an extent that it cannot be used without extensive repairs.
- ***Moderately Damaged***—Damaged to such an extent as to be partly unusable but can perform some part of its original function and will be fully usable with repairs.
- ***Slightly Damaged***—Damaged to an extent that may impose minor restrictions on its use but easily repairable.
- ***Undamaged***—Has suffered no damage or only minor cosmetic damage that has no effect on its use.

Other Terms

12. Other descriptive terminology may need to be developed to cover contamination and other factors.

DATA COLLECTION METHODS

13. Data can be collected for assessment purposes in a number of ways. The methods most appropriate to the needs of the relevant management system should be selected and procedures for their use developed. Recognised methods of post-disaster data collection include those detailed in paragraphs 14 to 24.

Automatic Initial Self-Assessment

14. Key officials are provided with details of the data they should collect, when they should collect it, and how they should pass it on in an emergency. Providing the officials with blank survey forms can encourage such assessment.

Informal Reports

15. These may come from those in the affected area and from other reliable information sources outside the formal emergency or disaster management system and can be valid and useful for assessment purposes. Reliability of sources and credibility of the information however, may need close scrutiny.

Visual Inspections

16. Visual inspections are rapid overviews designed to gain a general picture of what has occurred and what needs to be done. They may include reconnaissance by land, air or even water to identify the area affected, the major impacts and the areas most affected. (*See* Chapter 3)

First Field Surveys

17. When resources or time are limited, a multi-disciplinary team or teams may carry out a first field survey to collect data on impact and needs. The team(s) report back regularly to an emergency operations centre (EOC). Their reports guide priorities for response and set standards for monitoring purposes. If professional

personnel are not available to carry out subsequent surveys, follow-up surveys of this type may be carried out. First field survey teams may use any or all of the techniques listed below. (*See* Chapter 4)

Interviews with Key Informants

18. Interviews with key officials, representatives of non-government organisations, community leaders or leaders of displaced or evacuated groups.

Specialist Interviews

19. Data collected by means of face-to-face or electronic interviews by specialists aware of the information required and able to ask the right questions to obtain it.

Sample Surveys

20. These are formal surveys in which data is collected by means of recognised statistical sampling techniques. There are several types:

- ***Simple Random Sampling***—Every member of the target population is equally likely to be selected and the selection of one member of the target population has no effect on the other selections.
- ***Systematic Random Sampling***—Every person who appears at a particular interval (eg every fifth or tenth person) on a list is selected. This method can be very inaccurate if the list is not randomly prepared.
- ***Stratified Random Sampling***—The target population is divided into categories (or strata) and people are selected from each stratum by simple or systematic random sampling. The results from these samples are combined to give an overall sample.
- ***Cluster Sampling***—The sample is carried out in a limited number of geographical areas (clusters). From each clusters a sample is selected by simple or random sampling and these sub-samples are then combined to give an overall sample.

Sentinel Surveillance

21. This is a method often used in health sampling. Professional staff establish a monitoring system that detects and reports early signs of particular problems at specific sites. The method can be applied to other problems if early warning is particularly important.

Detailed Critical Sector Technical Assessment

22. Technical experts gather information relating to a particular sector, carry out specialised surveys and assess the results.

Continuing Surveillance by Regular 'Polling' Visits

23. This technique, which is well developed in health systems, involves regular visits to an affected area to check on developments since previous visits.

Continuing Surveillance by Routine Reporting

24. This technique requires the development of routine reporting systems to develop a comprehensive picture of events and developments.

SELECTING SURVEY METHODS

25. In the immediate post-disaster period, it is unlikely that survey teams will be able to visit every building or information source in the affected area. Teams will usually need to use a combination of visual inspections, interviews with key people and cluster or stratified random sampling to obtain information. Full surveys are only feasible if the affected area is small, numerous teams are deployed, or a series of surveys is to be conducted. Briefing notes for survey teams should include information on the various ways of gathering information. Guidance can be given at the team briefing on the most appropriate methods to be used during a particular survey.

SURVEY FORMS AND TEAMS

Designing Survey Forms

26. Structured data is needed to provide information. It is best obtained by use of standard survey forms appropriate to the phase of the emergency or disaster and the information collection system being used. Standard survey forms may be prepared at state, regional or local level.

27. Survey forms should be succinct, clear, easy to complete and with key questions highlighted to identify them for voice transmission if time is important. Forms should be designed in consultation with specialists in each of the major sectors for which information is needed. Ideally survey forms should:

- be pre-prepared using single-sided sheets of paper;
- have headings that identify the geographical area covered, the date and time of completion, and the person completing the form (with follow-up contact details);
- be laid out in a logical sequence; and
- contain enough space under each heading for completion in field conditions.

28. The style of form to be used depends on the expected users. If forms are to be used only by trained and briefed survey teams, brief headings can be used, as team members will understand the standard terms used and the way the sections are to be completed. If it is likely that untrained people or minimally-briefed people will use the form, a more general style containing explanatory notes may be needed. Team members could lose notes provided separately. This may affect the level of standardisation in the responses. If assessment information is to be reported back by telephone or radio, it is useful to number the key sections so that only the number and the relevant response need to be passed.

29. There are a number of ways of laying out survey forms. Ideally all questions would be listed on a single sheet of paper but there are usually so many questions that answers would need to be recorded separately and could become separated. Practically, a multi-sheet form with space for responses to be entered against each point is needed. It may be prepared as a continuous document covering all sectors or with separate pages for each sector or group of sectors. The second layout is recommended since survey teams can then be issued with just the forms for the sectors they are required to cover. It is usual to include both impact and needs in the same survey, using survey forms that contain questions relating to both subjects. Sample survey forms are shown in Annex A.

30. A template of each form should be available on the EOC computer. With experience, this is easy to modify and can be changed quickly if a special form is needed.

Printing and Distribution of Forms

31. Enough survey forms should be printed to cover more than one disaster. Copies should be available for officials in the affected area and in government departments, local government and NGOs so that they are aware of the information being sought. The forms can be used for local surveys with findings reported in a standard sequence before a survey team is deployed.

Identifying Potential Team Members

32. A **first field survey** team should be composed of between three and eight people. Large teams require greater support and can be daunting to those being surveyed and should be split into smaller teams to give wider coverage.

33. Multi-disciplinary first field survey teams should be selected when possible. Although it is rarely possible to have all disciplines represented in one survey team, such teams usually provide a set of information that is acceptable to a wider range of users. Team members from professional backgrounds are also better qualified to interpret needs in their sectors and suggest appropriate solutions. Nevertheless, in an emergency, a survey team can consist of a single person. The report may not be as comprehensive or authoritative but it will be better than no report at all and can be validated by follow-up surveys later.

34. A first field survey team, in which some roles may be combined, should ideally include the following:

- Team leader (who may come from one of the professional disciplines but preferably from the emergency management organisation).
- Someone with local knowledge (as above).
- Medical or health Representative.
- Damage assessment specialist (a civil engineer or builder).
- Water and sanitation specialists (possibly an environmental health officer).
- Logistics specialist.
- Recovery management specialist.
- Communications specialist (if required).

35. Agencies likely to be involved in survey missions should identify enough people with the knowledge and experience to carry out surveys to ensure that some are always available. Operational skills are not a pre-requisite for membership of survey teams. It is possible to use people who have no other role in the emergency or disaster organisation so that their commitment to survey tasks does not reduce other operational capabilities.

36. Potential team members should be medically fit. It is important that those selected for a particular mission confirm their fitness before being deployed. Team members should be briefed and trained in their role. Emergency alerting and activation systems should be established.

Policies and Guidelines on Response Activities by Survey Teams

37. Initial survey teams may be asked to delay their task to provide immediate assistance. Humanitarian considerations will strongly incline them to meet the need, no matter how ill equipped they may be for the task. This can compromise the survey. Policy on the extent to which teams can assist should be developed

at the planning stage and translated into clear guidelines to be provided in briefing. There is rarely time to develop such guidelines during a disaster and teams should not be left to make major decisions on priorities while performing their tasks. The guidelines should be supplemented by procedures for activating rapid responses to urgent needs identified by teams in the course of their mission.

Survey Team Equipment

38. A standard 'Survey Team Equipment List' should be prepared and the necessary materials held ready for issue when teams are deployed. A sample checklist is provided in Annex B.

39. Ideally, team leaders should carry a cash float to pay for transport, accommodation, meals and other miscellaneous team expenses. Survey teams should be self-supporting and teams from outside the area should be equipped, if weather, transport or other circumstances prevent their departure, to remain in the area for at least three days longer than briefed.

Standard Briefing Instructions for Survey Teams

40. In the pre-disaster period, it is important to prepare standard briefing instructions to be issued before a survey mission. As the team is likely to include people who do not have regular contact with the emergency or disaster management organisation, or who may be inexperienced in carrying out surveys, the instructions should briefly outline:

- purpose of the survey process;
- purpose of a first field survey;
- team organisation;
- team equipment;
- area to be surveyed;
- list and explanation of the information sectors to be covered;
- standard terms and their meanings;
- techniques for obtaining information;
- useful sources of information;
- level of detail required;
- usual reporting requirements;
- useful contact numbers;
- procedures for seeking priority assistance to meet urgent needs;
- handover procedures to follow-up or relieving teams; and
- instructions for actions in an emergency.

41. Members of the team should be briefed on the need to avoid becoming involved in response tasks, no matter how urgent these may appear. Team should also be briefed to carry out surveys in a manner that does not create tensions or hostility among the affected population or segments of it.

Training and Exercising Survey Teams

42. As in all emergency response activities, training and exercising those involved has a significant influence on their effectiveness. A suggested training program for team members would include:

- briefing on the emergency or disaster management organisation and relevant plans;
- explanation of the post disaster assessment requirement, emphasising the vital role of the first field survey;
- briefing on the structure and role of the team;
- interactive discussions on the information required;
- identification of potential sources of information;
- explanation of the various methods of sampling;
- training in the use of survey forms and identification of priority information;
- first aid training;
- map reading training for those without this skill;
- communications training;
- self-sufficiency and living in the field;
- identification of potential sources of stress and methods of dealing with them;
- role playing activities to practice survey techniques; and
- basic media training (teams will inevitably meet the media in the affected area).

43. Teams should be activated during emergency exercises to practice their role on 'exercise victims'. Collecting **baseline information** is also a valuable training activity.

SYSTEMS FOR COLLATING AND ANALYSING SURVEY REPORTS

44. A post-disaster survey and assessment system includes the collection, receipt, recording, collating, analysis and assessment of survey and other information received in the emergency operations centre. It requires a suitable paper or electronic database, procedures that help staff to maintain an overview of the situation, and arrangements to extract information that may be needed to assist decision-making. Early data is likely to be incomplete, anecdotal and conflicting. The database will need to be able to take account of these factors and should be able to record the reliability of sources and the credibility of the information. Compatibility with other information systems used in the operations centre and with those of other authorities and agencies is valuable.

45. Operation of the system(s) should be included in relevant plans and procedures. There is no standard format for an assessment report. The content will depend to some extent on the report's purpose. A basic format or sequence for such reports may be included in relevant procedures. A sample general assessment report is shown in Annex C.

BASELINE INFORMATION

46. Baseline information is information on the structure and characteristics of a community during normal times. Comparison of survey and other information with Baseline information is valuable when developing plans and priorities for response and recovery. Baseline information can be collected at local level to facilitate local emergency management or at regional, state or national level for wider area management.

47. Emergency management authorities rarely have the resources to collect and maintain all the baseline information they might need. While they can, and should, maintain core information for use at short notice, they should not duplicate the information databases maintained by specialist agencies. Instead, their baseline information should include emergency contacts through which it is possible to obtain the remaining information.

Example Sets

48. Baseline information requirements will vary with location and social structure. Each agency needs to decide what baseline information it should hold or be able to access. The following are sets of information that may be needed with examples of the detail that might be included:

- ***Geophysical Information***—This might include:
  - relief Maps;
  - transport system maps;
  - property maps;
  - land use maps;
  - street maps;
  - flood and other hazard maps; and
  - recent satellite photographs of major population and other areas.
- ***Socioeconomic Information***—This might include:
  - census details of population and households;
  - housing types and numbers;
  - statistical information on key economic activities and sources of income; and
  - language, cultural and social influences.
- ***Lifelines Information***—This might include:
  - roads with load classifications
  - railways;
  - key bridges and their strength and construction;
  - airports with runway and other capabilities;
  - ports, harbours, wharves and cargo handling capacity;

- hospitals and medical facilities and their capabilities;
- evacuation centres with their capacities and evacuation routes;
- power stations and key facilities;
- water works and key distribution networks;
- sewerage works and key networks;
- storm water drainage networks;
- fuel depots;
- telephone exchanges;
- radio networks including base stations, callsigns and frequencies; and
- radio and television broadcasting stations and their transmitter sites.

- ***Vulnerability Information***—This might include:
  - hazard and vulnerability analyses and maps;
  - locations of fuel and chemical storage sites;
  - flood zones and floodways;
  - schools;
  - retirement homes;
  - special homes;
  - prisons and custodial centres;
  - key industrial sites;
  - copies of key emergency response plans; and
  - underlying health issues in the community.
- ***Resource Information***—This might include:
  - police stations;
  - fire stations;
  - ambulance stations;
  - other emergency service depots;
  - sources of heavy plant, transport vehicles (land, water and air), storage facilities and specialised equipment; and
  - local suppliers of materials likely to be needed for relief purposes.
- ***Response Standards Information***—This might include:
  - minimum daily human requirements for water and food;
  - daily human water and food requirements when working;

- local, state, or national policies on relief delivery (including ration scales);
- standards and space requirements for evacuation centres;
- seasonal climate information (temperature, rainfall etc).

- ***Contact Information***—This might include names, appointment, with usual, and emergency contact details for:
  - key staff of emergency management and lifeline agencies, key industries and businesses in the area;
  - key staff of major government offices;
  - appropriate regional and state agencies;
  - appropriate agencies in neighbouring regions;
  - scientific and technical agencies (meteorological, geological, chemical, etc); and
  - people with experience in previous emergencies and disasters who have moved to new employment or retired but can provide advice or assistance if needed.

Potential Sources of Baseline and Other Information

49. There are many sources of baseline and other information. Examples are as follows:

- ***Baseline Information***—Sources include:
  - area maps and plans;
  - census and statistics agencies;
  - national, state and local government;
  - emergency services;
  - records of previous disasters;
  - scientific agencies;
  - infrastructure providers and administrators;
  - chambers of commerce;
  - professional and industrial peak bodies; and
  - community organisations.
- ***Post-Disaster Information***—Sources include:
  - scientific agencies;
  - other disaster and emergency managers and members of emergency services;
  - district or regional government officials;

- local experts (e.g. meteorologists, engineers, doctors and others etc);
- community leaders;
- crews of ships and aircraft in the area;
- anybody who is in or goes into the affected area;
- visual reconnaissance;
- survey teams;
- satellite photographs;
- aerial photography; and
- the media.

CHAPTER 3

VISUAL INSPECTIONS

INTRODUCTION

1. Immediately after an emergency or disaster has occurred, it is useful to carry out a rapid **visual inspection** of the area using whatever vehicle provides the best coverage in the shortest time. An aerial inspection by fixed-wing aircraft or helicopter is most suitable but motor vehicles can be used when aircraft are not available while boats may provide useful coverage of flooded areas or coastlines. When there is only pedestrian access to the affected area, resources may be used more effectively if the inspection is part of a **first field survey**.

2. The visual inspection is not a survey in the strict sense. It can provide basic data on the situation and major factors that may affect the response but little detail. It may also show where first field surveys will be most useful.

PURPOSE

3. The purpose of a visual inspection is to:

   - provide a rough estimate of the extent of the affected area;
   - locate the parts of that area that appear to be worst affected;
   - Identify the major damage impacts;
   - locate any mass gatherings of victims or any major evacuations that are taking place;
   - identify any major damage to the transport infrastructure or the environment; and
   - identify any obvious secondary threats.

VEHICLES

4. In an emergency, any vehicle can be used for a visual inspection but ideally it should be robust and have the following qualities:

   - large enough to carry a number of observers in addition to the driver/pilot/coxswain;
   - provide all observers with a clear view;
   - manoeuvrable in restricted areas;
   - reasonable endurance;
   - land vehicles should have an all wheel drive capability;
   - water vehicles should have shielded propulsion systems; and
   - aircraft should be able to fly slowly (a helicopter may be most appropriate).

OBSERVER TEAM

5. An observer team of 4–6 people is sufficient unless a long mission is planned, in which case reliefs may be needed. A visual inspection should not be seen as a sightseeing trip for interested spectators, media representatives or politicians. It is a professional emergency management task that can have a significant influence on the response to an event.

Team Attributes

6. The type of people who should be nominated as **observers** should include:
   - at least one person with local knowledge of the area being inspected and who has seen it previously from the type of vehicle selected;
   - An emergency service officer with broad experience of major events;
   - a civil engineer; and
   - a local government representative, preferably from the affected area.

7. In addition to these professional skills the chosen team members should have:
   - good eyesight;
   - experience of travel in the type of vehicle to be used (with no marked tendency to travel sickness); and
   - ability to read and interpret maps.

EQUIPMENT

8. Minimal equipment is required for visual inspections. Area maps, notebooks and pencils are usually sufficient for each member of the team. The maps should be able to be marked—laminated maps and water-soluble pens are recommended if available. Binoculars and a camera with spare film should be carried. Coffee and light snacks should be carried if available as they reduce fatigue. Sunglasses, drinking water and sick bags may be useful!

PREPARATIONS

9. The team should assemble in time for equipment issue and briefing before departure. At this stage any necessary indemnity forms should be completed and details of names, special expertise, parent agency and next of kin contacts recorded by the EOC in case of delays or other problems.

10. The EOC should designate:
    - team membership and the team leader,
    - the general area to be surveyed,
    - information required, and
    - reporting requirements.

BRIEFING

11. Because some of the observer team may be unfamiliar with visual inspection techniques, it is important to conduct a briefing before departure. The briefing should at least cover:

- composition of the team and responsibilities;
- purpose of the mission;
- area to be inspected;
- sequence of coverage;
- information needs (including any specific requirements);
- use of maps;
- seating arrangements (this can be done just before boarding);
- visual observation techniques;
- recording and reporting arrangements;
- arrangements for diversions to check of sightings (these should be coordinated by the team leader);
- policy on reporting and responding to urgent needs during the survey; and
- relief arrangements.

12. It should not be forgotten that the prime role of drivers/pilots/coxswains is to control the vehicle. They are key team members and should be included in the briefing if possible but their input to the inspection task is a bonus. If they cannot attend the briefing, the team leader should brief them comprehensively before departure.

IMPROVING AERIAL INSPECTION EFFECTIVENESS

13. On a long flight it can be hard to pay attention to what is being seen outside the aircraft. Constant movement, background noise and nausea are distracting and tiring, while map reading from the air can be difficult for inexperienced observers. Between trying to observe the scene below and keeping track of the location from the map, the observer may even become disorientated. The need to record significant sightings further increases the workload. For best results, observers should be relieved regularly.

Improvement Measures

14. The following measures can help to improve the effectiveness of an aerial inspection:

- There should be two observers on each side of the aircraft. This reduces the chance that an important sighting will be missed.
- Passengers without window seats can ease the load on observers by taking notes of sightings and other appropriate comments made by observer.

- If it is a long flight, observers should be rotated so that they can take regular rests. Seats should be changed every 30 minutes if possible to reduce fatigue. The maximum endurance of observers without rest is about 2–3 hours.
- On sighting anything vital that needs attention, observers should advise the Team Leader. To describe positions relative to the aircraft, observers should imagine themselves sitting on a clock face with 12 o'clock in the direction of the nose of the aircraft. Directions are then described in relation to the numbers on the analogue clock face, eg 'Survivors stranded on an island 4 o'clock 500 metres' indicates that the survivors were seen to the right of the aircraft, they have just been passed and they were about 500 metres away when seen. (Team leaders should ensure that all observers are familiar with the analogue clock face. There are people who use only digital clocks and are unfamiliar with the analogue clock layout).

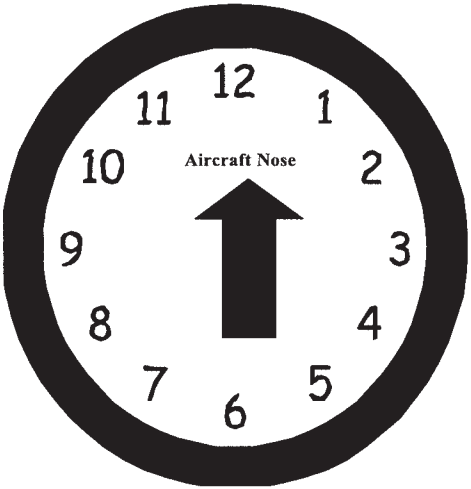

Figure 3–1: Direction Indication Based on Analogue Clock Face

- Observers should:
  - scan the view from left to right and back, starting in the distance and moving closer. Pause a few times every second as the eye must be fixed and focused on an object to see it properly;
  - move the head and not just the eyes to reduce eye strain;
  - periodically focus inside or on part of the aircraft for a moment to reduce fatigue—this is particularly important when inspecting areas where there is little contrast between light and dark;
  - use sunglasses if looking towards the sun;
  - sit as comfortably as possible and keep the window clean (if it is dirty before take-off the observer should ask that it be cleaned); and

- mark sighting locations on the map if possible.

DEBRIEFING

15. At the end of a visual inspection mission, the team leader should gather the team together to consolidate the sightings, notes and impressions and prepare a report. The team should be debriefed as a group by EOC staff who may call in representatives of key sectors, local government and any other appropriate agencies. While a verbal report and debriefing may meet immediate needs, a written report of the main findings should be prepared for the record.

CHECKLISTS

16. Checklists for deploying visual inspection teams are shown in Annex B.

CHAPTER 4

FIRST FIELD SURVEYS

INTRODUCTION

1. The first field survey after a disaster is a key activity that can have a major influence on later response activities and on the timing and effectiveness of the early stages of recovery. Its success depends on adequate planning and preparation both in non-disaster times and after the disaster occurs but before the survey takes place.

TIMING

2. The timing of a first field survey will vary according to the event and accessibility of the affected area. Transport, logistical, security or other considerations can delay surveys or limit the times available to carry them out. In general the following reaction times should be achieved:

   - Rapid-onset emergencies and disasters caused by earthquakes, tsunamis, major fires, severe storms (including tornadoes) and chemical accidents need to be surveyed as quickly as possible, preferably within hours of the event.
   - Slightly slower-onset events caused by cyclones, floods and epidemics should be surveyed within the first one to two days.
   - Slow-onset events like droughts and major environmental emergencies are more complex. They require special expertise and more detailed surveys that can take longer to plan and conduct. Consequently, timing is less critical than deploying survey teams with the appropriate professional and technical skills.

PRE–DISASTER PREPARATIONS

3. As much preparation for surveys as possible should be done in 'normal' times as part of disaster preparedness. These longer-term preparations are discussed in more detail in Chapter 2, and include:

   - identifying main information needs,
   - selecting suitable survey methods,
   - preparing and printing standard survey forms,
   - preparing standard briefing instructions for survey teams,
   - identifying potential team members,
   - developing guidelines on response activities by survey teams,
   - assembling and maintaining survey team equipment, and
   - training and exercising team members.

PRE–SURVEY PREPARATIONS

4. Some first field survey preparations can only be made when the event has occurred and information is available on the hazard and the area affected. These include:

   - identifying the area to be surveyed;
   - confirming key information needs;
   - assembling the team(s);
   - establishing transport and reporting arrangements;
   - issuing equipment; and
   - briefing.

Identifying the Area to be Surveyed

5. In determining the area to be surveyed, it is necessary to consider a number of factors that may not be known until after the disaster has occurred. These include:

   - the type of hazard, its intensity and its potential effects;
   - the physical characteristics of the area affected (terrain, vegetation, climatic conditions, soil types, water features etc)
   - location, size and density of the population in the affected area;
   - key authorities and agencies in the affected area (with contact details);
   - the location of known vulnerable areas and the ways in which they might be affected;
   - priority information needs;
   - whether early visual inspection has identified the worst affected areas or this is information to be provided by the survey;
   - the availability and content of reports from within the area;
   - any time constraints on the survey;
   - the skills and capabilities of available survey team members;
   - accessibility of the affected area and the ability to move within it;
   - communications arrangements for the team when within the area (will they have to return to base to report or can they pass interim reports from the area?);
   - plans for future surveys;
   - safety factors and evacuation arrangements; and
   - transport arrangements.

Confirming Information Needs

6. Information on the needs of affected communities has a higher priority than information on the impact of the hazard but both are important. The common priority information requirements after disaster are:

   - the boundaries of the affected area and the location and characteristics of major damage to centres of population (*these may have been outlined by visual inspection or inwards reports but will need confirmation*);
   - identification and location of severely affected isolated communities;
   - major needs of the population for assistance in the sectors of:
     - Search and Rescue;
     - Medical and Health;
     - Water Supply and Sanitation (WatSan);
     - Restoration of Lifelines;
     - Shelter; and
     - Food;
   - major secondary threats to survivors (*eg dam leakage, secondary flooding, landslide threats, fires, damage to chemical or fuel storage or vegetation*);
   - needs for immediate restoration of communications between emergency services in the worst affected areas
   - transport damage relevant to response operations *(road, bridge, airport and port damage*);
   - needs for restoration of public broadcasting and other information systems;
   - status of hospitals, clinics and other medical facilities and their staff;
   - status of lifelines; and
   - the availability and capability of local resources *(organisational as well as physical*).

Assembling the Team

7. Pre-disaster planning should have identified potential team members and developed an alerting and call-in system. This needs to be activated with designated team members assembled at a suitable location for briefing and issue of equipment. If enough team members are not available or additional specialised members are required, urgent arrangements must be made to supplement the team with suitable personnel from other sources.

Transport Arrangements

8. While transport into the area is easily arranged, return transport may be less easy to schedule. Transport within the survey area should be given a high priority. Allocation of a vehicle or vehicles for exclusive team use is the ideal as lack of transport can lengthen the survey as well as reducing coverage.

Reporting Arrangements

9. In the early stages of a disaster, accurate and timely information is vital for effective decision-making. Even limited information is better than none. First field survey teams should be briefed to report significant findings immediately and make daily interim reports at the end of each day.

10. If line telecommunications are not available from the survey area, teams should be equipped with radio or satellite communications equipment. If this is not available, information should be passed by any available means. Agencies asked to relay or carry survey reports should be made aware of their importance.

Team Equipment

11. Survey team equipment should be issued in time to enable team members to check it, identify shortfalls, familiarise themselves with new items, and pack. Issue should precede briefing so that questions can be discussed during the briefing.

Maps

12. The most up-to-date and comprehensive maps available in a suitable scale should be provided for the team.

Briefing

13. Although there may be pressure to deploy teams quickly, a comprehensive briefing will make a significant contribution to the success of the survey mission. First Field Survey Teams should be briefed as a team rather than individually. The briefing should be provided in a logical sequence and include at least:

- team organisation (*including leadership, special responsibilities*);
- situation briefing (*provide copies of existing reports*);
- known information about the affected area (*including maps and locations of emergency services bases, medical facilities and vulnerable areas*);
- definition of the area to be covered;
- information requirements (*highlighting key items of information required*);
- use of **survey forms**;
- reporting arrangements (*including frequency of reports and systems to be used*);
- contact details (*both to base and within the area*);
- safety and security considerations (*including emergency evacuation arrangements)*;
- guidelines on dealing with urgent response needs; and
- instructions for dealing with the media.

Standard briefing information prepared in the pre-disaster period may be provided in written as well as verbal form.

CONDUCTING THE SURVEY

14. On arrival in the survey area, the team should introduce themselves to the authorities and explain their task and expectations, emphasising the importance of their task for both response and recovery. Members should provide a copy of the survey form and explain their information needs. Guidance should be sought about needs or sectors needing special attention.

15. In the field, the team should try to work in groups of two or more people. Before splitting up, specialists should brief non-specialists on the information needed, providing enough background information to survey all sectors and to identify crisis points for specialist exploration if required.

Questioning

16. Questioning of local agencies should be as brief as possible. Questions should be posed in a non-judgemental way with appreciation being shown for the information provided and the work being done. Criticisms should be expressed constructively in the form of suggestions.

17. It should be accepted that hard data, such as actual numbers, may not be available but judgements of percentage figures is usually available. The lack of information or the poor quality of information may indicate a problem that needs to be addressed. The team should identify areas and sectors in which it is impossible to obtain information and include these in their reports with the reasons for the shortfall.

18. In an extended survey mission, the situation may be changing quickly. Teams should collect the most recent information and highlight any trends, particularly in the final report.

Checking

19. Cross-checking should be carried out whenever possible. By comparing information from a variety of sources, it may be possible to build a clearer picture of the situation than is available from any one source. In the confusion of the response phase, rumours can proliferate and become accepted as fact while subjective views and incomplete information can be presented as the whole story.

20. At the end of each day, the team should set time aside to share impressions and information before reports are finalised and sent. This is the time to share concerns and further surveys. A similar period should be reserved at the end of the mission and before debriefing to enable the team to agree its findings and recommendations then consolidate its report.

DEBRIEFING

21. After completing its report, the survey team should always be given a verbal debriefing by response and recovery managers. There will be additional information that may not appear on survey forms but will be useful for planning and management purposes. Team members' impressions of trends and developments, as well as the activities taking place in the area, may also be of interest.

22. Debriefing may best be conducted in the form of a presentation by the survey team followed by a question and answer session. The presentation should include:

- description of the affected area;
- explanation of the main impacts and any secondary threats;
- description of the affected population (numbers, estimated breakdown by age, sex and vulnerability);
- estimated casualty figures and any qualifications and expectations;
- identification of major needs;
- response capability in the area;
- resources in the area;
- logistical factors that may influence the response;
- other specialist points;
- recommendations concerning response priorities; and
- recommendations relating to recovery, rehabilitation and vulnerability reduction.

CHECKLIST

23. Checklists for survey team deployment are shown in Annex B.

CHAPTER 5

FOLLOW–UP AND OTHER SURVEYS

INTRODUCTION

1. A first field survey is usually carried out in a period when information is still fragmented; when key people in the affected area may be involved in early response activities; and when operational time constraints and movement limitations make it difficult for the survey team to obtain a complete picture of what has occurred. As a consequence, the survey information is likely to be incomplete. Further, the situation may change, sometimes hourly, particularly in the early stages of an event. Updated information will be needed. Follow-up surveys are needed to fill gaps and maintain the currency of the decision-making information.

Follow-Up Survey Types

2. Follow-up surveys may include:

   - general surveys to update earlier information;
   - detailed surveys to obtain more comprehensive information; and
   - specialist surveys that address impacts and needs in relation to specific sectors.

COORDINATION OF SURVEY MISSIONS

3. Coordination of survey missions is difficult. Survey mission coordination plans should aim to keep the number of missions to the minimum needed to gather vital information Supporting procedures should detail arrangements for sharing survey information widely.

4. Agencies involved in the planning process will ensure that key information needs appear on survey forms, and will make staff available to join multi-sectoral survey missions. Agencies that have not been involved in planning may wish to send independent missions but should be encouraged to join coordinated missions.

Team Brief and Debrief

5. All survey teams should be briefed on available information before they begin their activities and made aware of other missions in the area. Every team should be debriefed and a copy of its report should be distributed to other interested agencies with key points included in situation reports.

GENERAL SURVEYS

6. Additional general surveys may be needed when the personnel needed to carry out follow-up specialist surveys are not available or when a wide range of information is still needed. The guidance provided in Chapter 4 is generally valid for such surveys.

7. Teams carrying out later general surveys should be better briefed and able to target their activities more precisely. Pre-mission briefing should cover the items listed in Chapter 4 as well as:

   - provision of copies of previous survey reports relevant to the area to be surveyed;
   - details of any concurrent surveys or planned specialist surveys (the latter may affect the range of information the team is briefed to collect); and
   - any available damage photographs or other visual material.

Survey Forms

8. If possible, modified survey forms listing the information needed from each particular mission should be prepared.

DETAILED SURVEYS

9. After the initial response, it may be necessary to carry out detailed surveys to obtain data needed to plan response and recovery in more detail. These surveys may use sampling techniques or may need to question a wide range of households, businesses or sectoral representatives. The results should help emergency managers to deploy available resources more effectively as well as identifying the magnitude of back-up needs.

10. People from a wide variety of backgrounds can carry out detailed surveys if they are adequately briefed. Volunteers from outside the emergency management system may be used to reduce the demands on skilled and trained staff needed for other relief or recovery tasks

11. Special questionnaires will need to be developed and a survey plan prepared that enables every part of the target community to be visited. Team members may require different equipment including special maps that show the detail of particular Lifelines networks or show every house in a district. Such maps can be used in conjunction with a questionnaire by having the survey team mark the map with appropriate codes to aid rapid transfer of information to geographical information systems or databases.

SPECIALIST SURVEYS

12. Specialist surveys, to identify disaster impact and response and recovery needs for particular sectors, are likely to be required by agencies with special responsibilities. The survey teams will predominantly consist of skilled and professional personnel. If a large area must be covered, if time is short, or if special support is needed, additional personnel from other backgrounds may join the teams.

13. The urgency of specialist surveys will vary. Sectors involved in immediate response will require early missions but other specialist surveys can be deferred until immediate needs have been met and access has improved.

Typical Missions

14. While it is not possible to forecast all the specialist survey missions that may be required after an event, a typical list might include the following:

- ***Priority 1 Missions***—These would involve:
  - Medical and health (*including environmental health*); and
  - Lifelines/infrastructure repair needs (*electricity, water, sewerage, roads, bridges, aviation and marine navigation aids etc*).
- ***Priority 2 Missions***—These are slightly less urgent but still critical for relief as well as recovery and would involve:
  - welfare;
  - housing damage;
  - civil engineering and major building damage; and
  - agriculture.
- ***Priority 3 Missions***—Recovery Survey with more detailed assessments and different aims involving:
  - insurance (*domestic and commercial*);
  - business recovery; and
  - local and state government recovery.
- ***Scientific and Research Missions (as appropriate)***—These might involve:
  - assessments of the event by scientific agencies (*meteorological, geological, sociological etc*);
  - research by universities and professional groups; or
  - post-disaster analysis by emergency services and operators of lifelines and other key community resources.

INTERNATIONAL ASSESSMENT TEAMS

15. News of any major disaster is quickly picked up by the national and international media and flashed round the world. National disasters have become international disasters that can activate responses from governments and non-government organisations (NGOs) from outside the affected country. Developed countries can usually manage without international assistance but a major disaster, perhaps an earthquake in a major city, could cause such extensive casualties and damage that overseas response assistance might be sought. If this occurs, responders may wish to deploy their own assessment teams. It is also possible that international media interest could trigger a spontaneous international response that can only be controlled by allowing selected international teams to confirm that external assistance is not required.

16. International assessment teams will have their own operating procedures but are likely to lack local knowledge and baseline information. As a result, they may seek to work with relevant national, state and local authorities. This cooperation should be encouraged.

Commonwealth Coordination

17. As the Commonwealth Government is responsible for foreign relations and immigration matters, first contact by national and intergovernmental agencies wishing to despatch survey teams is likely to be through the Department of Foreign Affairs and Trade and/or Emergency Management Australia (EMA). EMA, as the Commonwealth emergency management agency, will liaise with the relevant State or Territory to coordinate the teams' activities.

18. If notice is given that an international agency intends to send a survey or assessment team to Australia, every effort should be made to advise the despatching agency to:

- arrange passports and visas for entry into Australia;
- be aware of Australian quarantine regulations;
- arrange for any inoculations or prophylaxis required in the affected area; and
- ensure that the team will be self-sufficient for a period of at least 14 days.

NGO Teams

19. Teams from international NGOs are likely to make first contact with a partner organisation in Australia. They may subsequently make contact at government level but their arrival and activities may not become known to Commonwealth, State or Territory Governments until they land. The team leader of an international assessment team will usually contact local emergency managers seeking information on the current situation before beginning a survey. This is an opportunity to brief the team on the local-area and on the current situation. An emergency services staff member with local knowledge, preferably with survey training, should be nominated to liaise with international teams. Many international agencies use English as their working languages so it is unlikely that interpreter services will be needed. The teams should be encouraged to participate in the coordinated survey program, sharing their expertise and profiting from information from the existing system. Ultimately Commonwealth, State and Territory authorities should coordinate their activities. All teams should be debriefed and asked to provide a copy of their report.

THE UNITED NATIONS DISASTER ASSESSMENT AND COORDINATION (UNDAC) TEAM

20. In major disasters, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) can deploy an international team of disaster professionals, known as a United Nations Disaster Assessment and Coordination (UNDAC) Team to assess the situation and assist the affected country with coordination of international assistance. A Team is usually deployed in response to a request from the government of the affected country or the United Nations Resident Coordinator, who is the senior United Nations representative in the country. In extreme circumstances, such as major earthquakes in large centres of population, the team may be deployed in anticipation of a request so as to be on-site for any convergence of international assistance.

UNDAC Teams

21. UNDAC Teams are usually small teams of 6–10 people, typically deployed for 2–3 weeks. They are normally led by a United Nations staff member with the remaining members being selected from member countries. The national members are selected by their countries because of their experience or specialised skills and receive additional United Nations training. Teams are deployed at no cost to the recipient country. Team members do not usually join missions in their own countries but there are exceptions to this policy.

22. The functions of an UNDAC Team vary according to the disaster and the need. However, it works in support of the United Nations Resident Coordinator, in close collaboration with other United Nations agencies in the affected country and national emergency management authorities. Team members are trained to make rapid assessments of relief needs and to pass them to Geneva for inclusion in internationally distributed situation reports. They also support the national authorities in coordinating the activities of international relief teams should these be deployed.

23. Australia has nominated a number of UNDAC Team members through the Australian Agency for International Development (AusAID).

CHAPTER 6

USE OF TECHNOLOGY

'Note: Satellite Imagery used in this chapter has been provided by the Australian Centre for Remote Sensing (ACRES), within the National Mapping Division of Geoscience Australia.'

INTRODUCTION

1. Previous chapters have discussed survey and assessment activities without mentioning the use of technology. This is because the availability of technological aids after a disaster can never be guaranteed. Most require electrical power (mains, generator or battery), which may be unavailable or restricted. Yet such equipment can facilitate survey and assessment processes. Technological development is rapid and a manual of this type cannot discuss every potentially useful item. Emergency managers should keep abreast of technological developments and their availability. Some current technology that may be valuable for survey and assessment is discussed below.

COMMUNICATIONS

Radio

2. Radio communications systems have developed significantly in recent years. Australian high frequency (HF) radios are highly valued by overseas disaster organisations since development continued here when other countries were concentrating on developing satellite communications. HF radios with data and facsimile capability are now available and can transfer large amounts of information quickly and cheaply. During survey operations in large or remote areas teams may need to be equipped with suitable HF radio equipment.

3. Survey teams will also benefit from the use of short-range (VHF or UHF) hand-held radios for mutual communication. These radios make the comparing of notes, communication of revised briefing, sharing of information and joining up a dispersed team very much easier. Use of radio also reduces the pressure on congested mobile telephone networks. Where possible, survey team radios should carry key local emergency service frequencies.

Mobile Telephone

4. If a mobile telephone system is working in a survey area, survey teams can benefit from carrying handsets for communication, arranging interviews and meetings and reporting urgent and other needs. However, mobile telephones should never be relied upon for emergency communications unless a special network has been established for the purpose. Their increasing use at all levels of society means that normal systems can quickly become congested in an emergency.

Satellite Communications

5. In the difficult communications environment of a disaster area, satellite communications may be the most reliable link with distant authorities. Equipment costs are falling but calls are expensive, being charged as international calls with a premium for use of the satellite system. This cost must be weighed against the convenience the equipment provides. The following types of equipment might be considered for use:

   - ***Handset Type***—These systems have great potential value for disaster or emergency survey teams. The handset is only slightly larger than a normal mobile telephone and almost as easy to use. Data and facsimile facilities are becoming available. The handsets are likely to be powered by rechargeable batteries and some models will soon be able to be recharged using solar power. Details of available equipment and of new capabilities, such as fixed satellite aerials that can be connected to normal telephone handsets, are available from satellite communications companies

   - ***Inmarsat M***—These effective and reliable small satellite communications sets operate through the Inmarsat satellites that provide coverage to most parts of the world. They are widely used in the international disaster assessment community. A typical unit is about the size of a notebook computer, (Figure 6–1) with an aerial that can be detached and positioned some metres away from the operating unit. Both voice and data traffic can be transferred, although an external facsimile or computer must be attached for the latter. Inmarsat M equipment usually has a rechargeable internal battery and can be powered by AC mains or by DC from a 10–34 volt battery system (eg a vehicle battery).

Figure 6–1: Inmarsat M Equipment ***(Pacific Emergency Management Associates Pty Ltd)***

- ***Inmarsat A and C***—These older sets also operate through the Inmarsat satellites. Different models can provide voice, data and/or facsimile communications. Power requirements are similar to those of the Inmarsat M but the equipment is usually heavier and bulkier.

- ***Australian Satellite Communication Systems***—Portable satellite terminals that operate in the Australian region using the MobileSat geostationary satellites are also available. These satellites have a coverage footprint that covers the Australian and New Zealand land areas and up to 200 km offshore. They can provide telephone, facsimile and data services using portable, fixed location, motor vehicle, ship or aircraft mounted units. Voice Mail and GPS related services are also available. Details of the equipment and of current and planned services can be obtained through the Internet or from satellite communications companies.

COMPUTERS

6. Laptop, notebook and palm top computers are valuable aids to survey teams. They make it easy to record and store information for later recall and consolidation into reports. Many palm top computers can be operated inside a plastic bag for protection from dust or rain during fieldwork. Robust metal-cased notebook computers, developed for use by civil engineers and others who work in harsh conditions, are valuable for survey teams and other emergency workers.

7. When equipped with modems, computers can transmit large amounts of data rapidly over radio, telephone or satellite communication networks. A valuable accessory for any computer being operated in disaster or emergency-affected areas is a surge-protector to protect the computer against power variations and spikes. An uninterruptible power supply (UPS) is also useful in allowing time for the computer to be shut down without damage if a power failure occurs.

INTERNET

8. Through modem-equipped computers and even through certain mobile telephones, survey teams can connect to the Internet. This enables the team to Email reports and to obtain information from the World Wide Web. From the web, it may be possible to obtain maps and information on the affected area, other similar disasters, current and forecast weather conditions and other relevant subjects.

NIGHT AND INFRARED VISION EQUIPMENT

9. Survey teams do not normally need night and infrared vision equipment but it can be valuable if information is needed urgently and teams must operate at night.

GLOBAL POSITIONING SYSTEMS (GPS)

10. Small hand-held Global Positioning System (GPS) navigation aids are freely available and can be very useful on survey missions. When working in a large area or one that is not well mapped, GPS can be used to help navigation. At other times the equipment can be used to pinpoint the position of any casualty, damaged facility, landing site or other point of interest to the survey. GPS positions relayed to an EOC can facilitate the preparation of disaster area maps.

PHOTOGRAPHY

11. Various photographic applications can be very valuable for damage survey and assessment. Three are described here.

Aerial

12. The value of aerial photography to emergency managers is often ignored. Most Australian states and territories have resident aerial survey companies able to take oblique or vertical photographs of a disaster area relatively quickly. Vertical photographs, suitably enlarged, can be valuable for identifying the extent of damage, for use as maps of the affected area and for briefing survey teams (Figure 6–2 and 6–3). Oblique photographs can be used to survey and even count damage to particular areas or to specific assets (Figure 6–4). If scanned and digitised, aerial photographs can be rapidly transferred between operations centres.

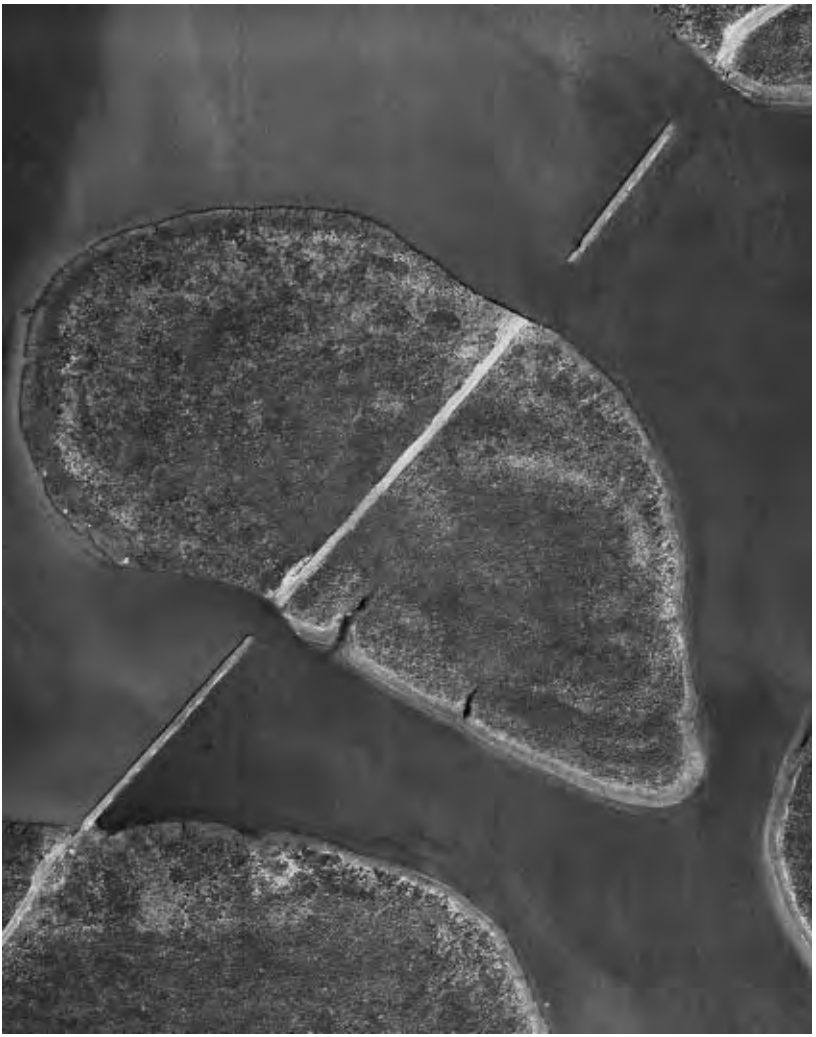

Figure 6–2: Vertical Photograph—Roads Cut by Flooding in Western Australia, March 1999.(*RAAF Photograph)*

Figure 6–3: Vertical Photograph—Cyclone Damage RAAF Base Learmonth, Western Australia, October 1999. (*RAAF Photograph*)

Figure 6–4: Oblique Photograph—Hail-Damaged Houses Sydney, NSW, April 1999 (*EMA Collection*)

Digital

13. Digital cameras record digital images and store them for downloading into computers. The images can be transferred between locations like any other data, viewed on computer screens, printed out or incorporated in documents.

14. Digital cameras are valuable for survey teams as they enable important images to be recorded, downloaded onto computers and transferred directly to the EOC. If a team is not equipped to download and transfer images from the field, the transfer can take place at the end of the mission.

Satellite

15. Satellite imagery can be a valuable assessment aid. In the past, it has provided information on the extent of flood areas, the extent and degree of damage to vegetation caused by fire, drought or pest attack, the location of fire fronts, the spread of marine pollution and, in other countries, the location and extent of earth movements in earthquakes. The imagery can be provided from a variety of visual, radar and sensor systems, each of which has value for particular purposes. Emergency managers should to discuss the use of each type of imagery in different circumstances with local and national experts. Figures 6–5 – 6–8 are satellite images showing the impact of hazards in Australia.

16. Satellite imagery is rarely available in real time as many of the imagery satellites are in orbits that shift constantly to provide global cover over a period. The exceptions are the geostationary meteorological satellites that provide continuous weather imagery for specific areas. Unfortunately this imagery is usually too coarse to provide the detailed information required for post-disaster survey and assessment.

17. Satellite imagery is expensive. Although the satellites collect imagery almost continuously, it is rarely downloaded unless a user has been identified. Current or purpose-collected imagery is specially commissioned. The catalogue of AUSLIG, Australia's National Mapping Agency, or of any commercial satellite agency provides an indication of availability and costs. Older satellite imagery is cheaper and is available for most populated areas. It is valuable for comparison with post-disaster imagery.

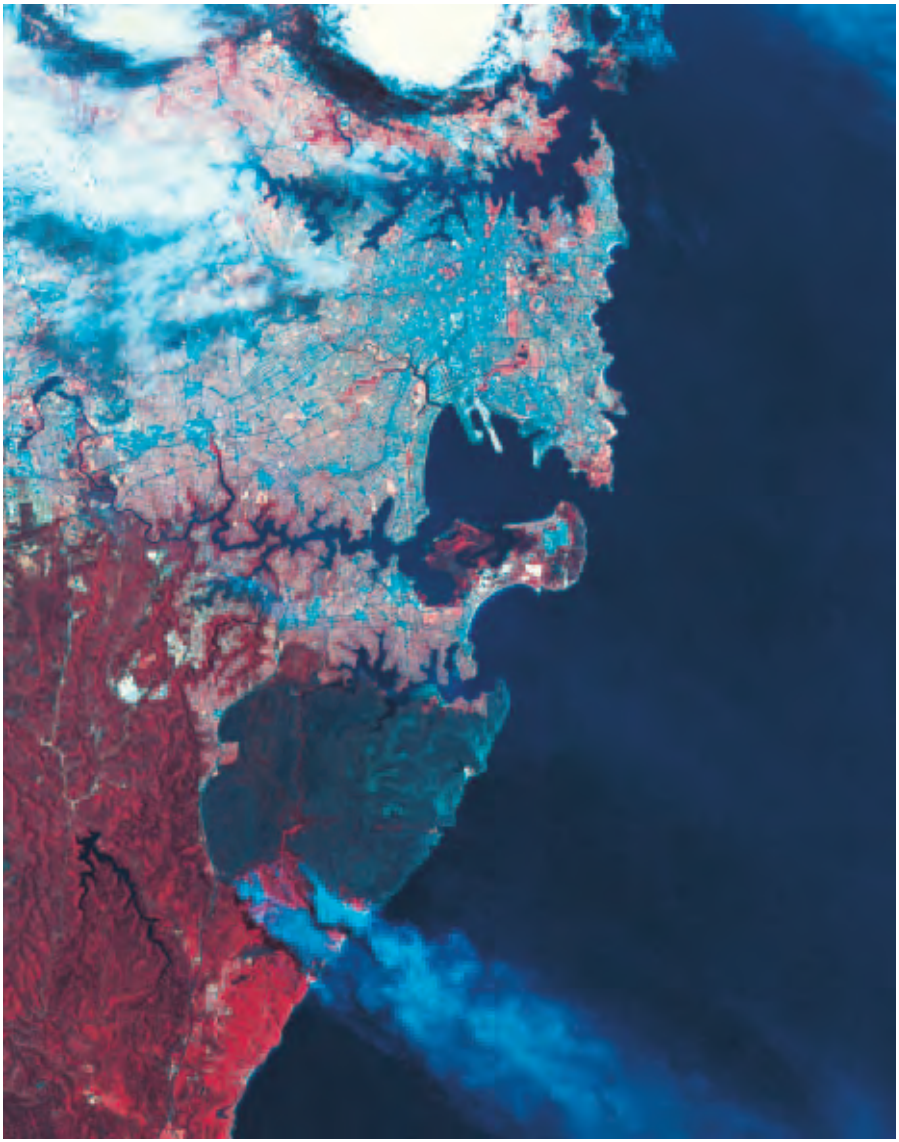

Figure 6–5: SPOT 2 Image—Bushfires, Royal National Park, Sydney, NSW, January 1994. ***Copyright © CNES (1994)***

Figure 6–6: SPOT 4 Image—Mosaic of Cooper Creek Floods, Queensland, March 2000. The Town of Windorah Lies on the Peninsula (left of the flooded area). ***Copyright © CNES (2000)***

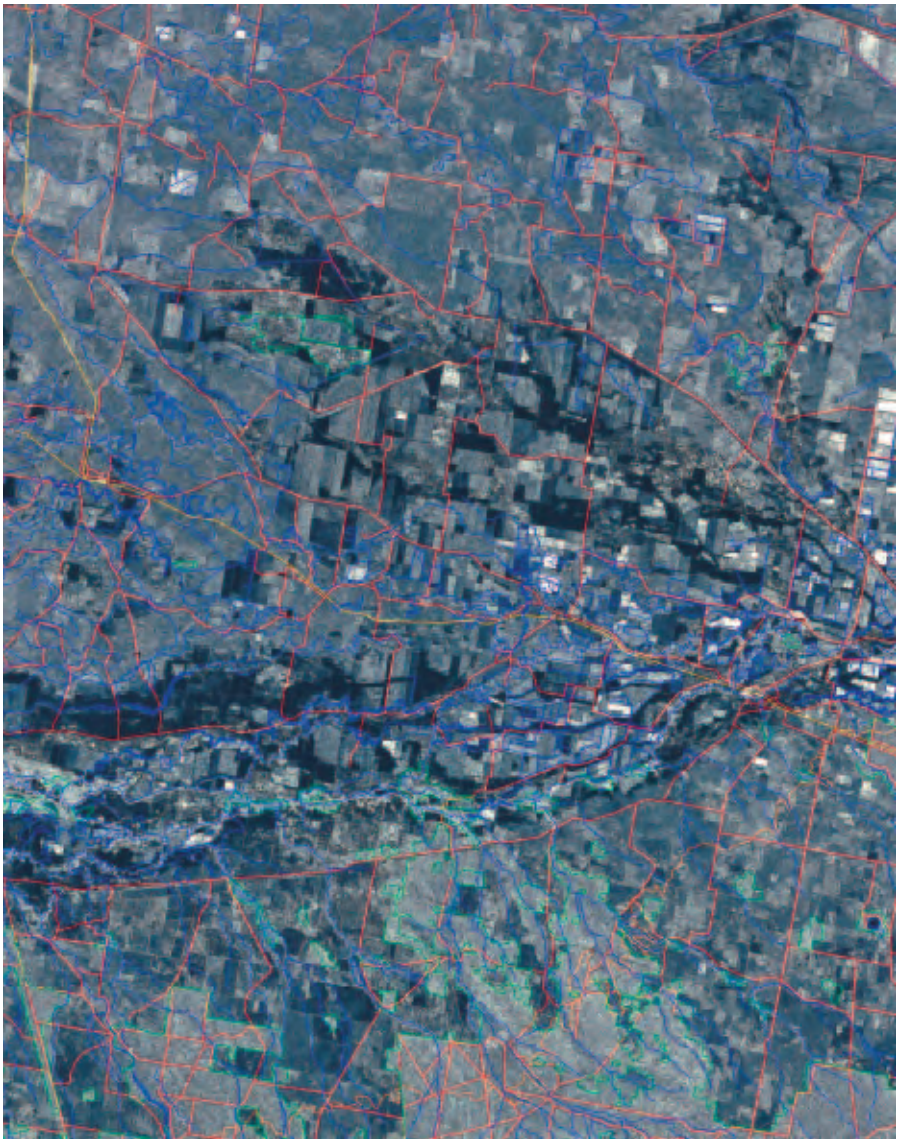

Figure 6–7: Radarsat Image—Wee Waa, NSW Floods, July 1998. The image has had Geographical Information System (GIS) data layers superimposed to show roads, railways, and waterways.

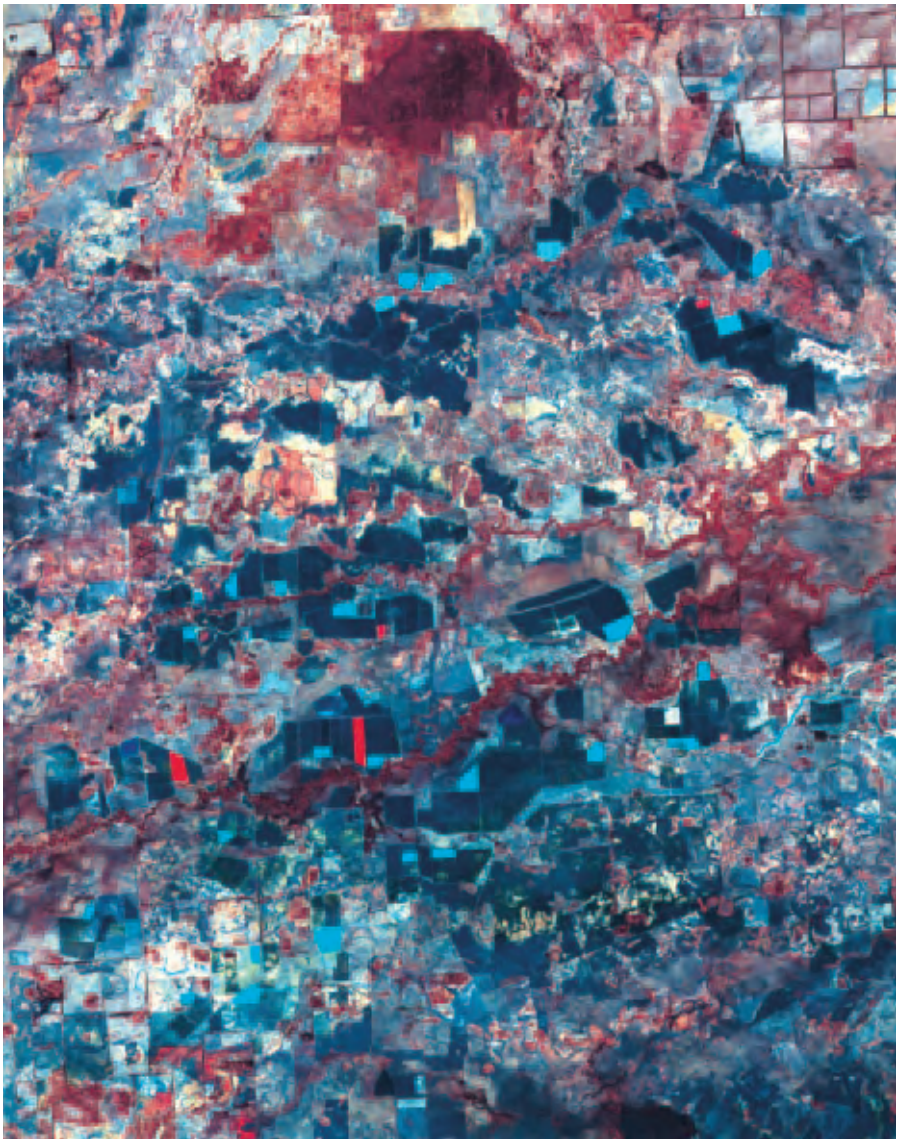

Figure 6–8: SPOT 2 Baseline Image—Macintyre River Area on the Queensland/New South Wales Border near Goondiwindi, October 1994.

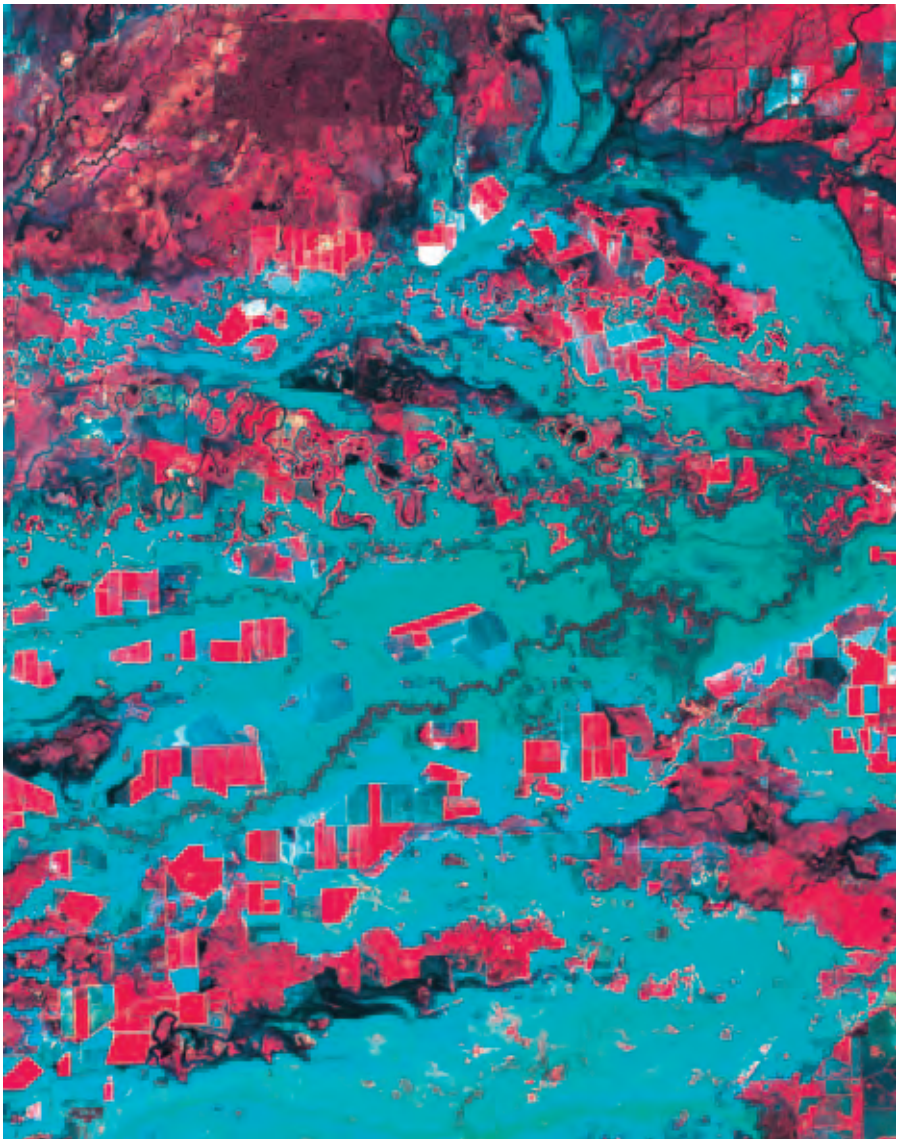

Figure 6–9: SPOT 2 Image—Same Area as Figure 6–6 – 6–8 with Macintyre River in Flood, but in January 1996. ***Copyright © CNES (1996)***

POST–DISASTER SURVEY FORMS

POST–DISASTER SURVEY FORM A—URGENT SEARCH AND RESCUE NEEDS

NB: This information should be passed to the emergency operations centre with minimum delay

LOCATION		**DISTRICT**	
DATE			
Survey by (Name)		**Contact Details**	

RESCUE

Are there any rescue needs? YES/NO. Approximate number of people needing rescue: .....

Location(s) (as accurately as possible):

What are the problems?

Is equipment available, if not, what is needed?

SEARCH

Are there any people missing? YES/NO How Many?.....

Where were they last seen?

What were they doing then?

What action has been taken so far?

What help is needed?

URGENT MEDICAL NEEDS

Is there anyone sick or injured who might die if they are moved? YES/NO How many? .....

Has a medical professional examined them? YES/NO

What seems to be wrong with them?

Is there anyone who needs to be evacuated to hospital? YES/NO. How Many? .....

What transport and other special equipment may be needed?

Remarks:

POST–DISASTER SURVEY FORM B—CASUALTIES AND DAMAGE

LOCATION		**DISTRICT**	
DATE			
Survey by (Name)		**Contact Details**	

Population: Adults (over 15 years)..... Children (5 to 15)..... Infants (under 5 years).....

Casualties: Dead ..... Missing ..... Seriously injured ..... Moderately injured ..... Slightly injured ..... Sick .....

Evacuations Number of evacuees: .....
Major evacuation centres and numbers at each: .....
.....

HOUSING DAMAGE (give numbers or percentages)

House Type	Brick	Wood	Fibro	Other (describe)
Destroyed				
Major Damage				
Moderate Damage				
Slight Damage				

Describe major damage types:

OTHER BUILDING DAMAGE

Community facilities (hospitals, clinics, schools, emergency service centres etc):

Other buildings (give details):

Describe any risks to or from remaining or damaged buildings:

DAMAGE TO KEY TRANSPORT LINKS

Roads

Bridges

Airports

Port and wharf facilities

COMMUNICATIONS

Describe major damage to communications and broadcasting facilities and list surviving facilities

Remarks

POST–DISASTER SURVEY FORM C—MEDICAL AND PUBLIC HEALTH

LOCATION		**DISTRICT**	
DATE			
Survey by (Name)		**Contact Details**	

MEDICAL FACILITIES (circle correct answers)

Hospital(s):

BEDS	Available	Occupied	Remaining Capacity

Describe any damage:

Availability of key resources (operating theatres, x-ray etc):

Medical staff available? DOCTORS ..... NURSES ..... OTHERS (Describe) ..... Are more staff needed? YES/NO

What other medical and health facilities are: a. damaged; or b. remain available?

Medical Supplies

List needs (description and amounts):

ENVIRONMENTAL HEALTH CONCERNS

(Tick as necessary and give details)

Polluted water ..... Poor drainage .....

Stagnant water ..... Poor hygiene .....

Overcrowding ..... Rotting food .....

Insect/rat infestation..... Spraying needed? YES/NO

Toilet/sewerage systems AVAILABLE/DAMAGED/NOT AVAILABLE

Is there any problem with sewage disposal? YES/NO

Details and needs

Remarks

POST–DISASTER SURVEY FORM D—WATER AND SANITATION

LOCATION		**DISTRICT**	
DATE			
Survey by (Name)		**Contact Details**	

WATER SUPPLY

Source of supply: Method of storage:

Disaster effect on supply (tick as appropriate)

	Drinking	Household	Agriculture	Industry
AMOUNT				
No Difference				
Reduced but Enough				
Not Enough				
No Water				
SAFETY				
Seems Safe				
Potentially Unsafe				
Definitely Unsafe				

Describe any damage to the supply, storage and/or distribution system and say why it might not be safe:

.....

.....

.....

How much water needs to be brought In?

Every day: ..... For how long? .....

SANITATION

Sewerage systems used in the area (tick all that apply)

Mains ..... Septic Tank ..... Composting ..... Other .....

For mains systems: is the system operating? YES/NO Has it overflowed or been flooded? YES/NO

Is the disposal system working? YES/NO

Describe any problems and needs:

Other systems:

Have septic tanks and other systems been subject to overflowing, flooding or other problems? YES/NO

Is this still occurring? YES/NO

Describe any other problems:

Remarks

POST–DISASTER SURVEY FORM E—ADMINISTRATION, COMMUNICATIONS, TRANSPORT AND PUBLIC FACILITIES

LOCATION		**DISTRICT**	
DATE			
Survey by (Name)		**Contact Details**	

ADMINISTRATION

Who is managing post-disaster activities?.....
Contact details ..... Office location.....

EMERGENCY SERVICES

Services available:
Problems resulting from the event:

Support needs:

COMMUNICATIONS

List communications available to the emergency operations centre:

Which public radio broadcasting stations are being received? .....
List any help needed for communications:

TRANSPORT

Road

Which main roads are closed?

Estimated time to clear these or details of help needed:

Railway

Detail any damage to railways and immediate support needs:

Air

Describe any damage or limitations to the airport and air navigation equipment (including air radio):

Aircraft availability: List any serviceable helicopters and small transport aircraft:

Water

Describe any damage to port facilities and marine navigation aids:

What is the best place to land relief supplies?

Are there any boats available locally for relief transport?

LIFELINES

Is electricity working? YES/NO. If no, why not?

What fuel is available (type and amount)?

List any other public facilities damaged: .....

POST–DISASTER SURVEY FORM E—FOOD

LOCATION		**DISTRICT**	
DATE			
Survey by (Name)		**Contact Details**	

HOME SUPPLIES

How many days of food do most families have?.....
How many people have no food?.....

FOOD STORES

What major supplies of food are available in shops or stores?

Item	Amount	Where

Is any rationing if force?.....
Who is controlling it?.....

IMMEDIATE FOOD NEEDS

What foods are needed? Give Details.

Item	Daily Requirement	From (Date)

Who should relief supplies be addressed to?
Who will supervise relief issues?.....

SPECIAL FOOD NEEDS

Are there any special food needs (baby food etc) for particular people? Give Details.

Item	Daily Requirement	From (Date)

Remarks

POST–DISASTER SURVEY FORM G—AGRICULTURE

LOCATION		**DISTRICT**	
DATE			
Survey by (Name)		**Contact Details**	

DAMAGE TO CROPS

Crop	Area	Destroyed (%)	Damaged but Salvageable (%)	Undamaged (%)	Remarks

LIVESTOCK LOSSES

Animal Type	Dead	Injured/Stranded	Missing	Remaining

AGRICULTURAL EQUIPMENT

Describe losses

NEEDS

Remarks

DISASTER SURVEY AND ASSESSMENT CHECKLISTS

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CHECKLIST 1—SYSTEM PLANNING CHECKLIST

Identify the information users	
Identify their information needs	
Agree standard terminology	
Casualty descriptions	
Damage descriptions	
Decide on data collection methods	
Design Survey Forms	
Visual inspections	
First field surveys	
Follow-up surveys	
Specialised surveys	
Print initial supply of Survey Forms	
Establish systems for collating and analysing survey reports	
Paper systems	
Electronic database(s)	
Operations room displays	
GIS	
Develop guidelines on response activities by survey teams	
Collect or identify sources of baseline information	
Geophysical information	
Socio economic information	
Lifelines information	
Vulnerability information	
Resource information	
Response standards	
Contact lists	

CHECKLIST 2—SURVEY TEAM PLANNING CHECKLIST

Identify sources of suitable team members	
Seek nominations of potential team members	
Team Leaders	
Specialists/Professionals	
Medical/Health	
Damage (civil engineers/architects)	
Water and Sanitation	
Logistics	
Communications	
Other	
Other	
Prepare and maintain contact lists	
Establish call-out arrangements	
Identify and prepare team equipment (*see* Checklists 4 and 7)	
Confirm Survey Forms are printed (*see* Checklist 1)	
Prepare standard briefing for teams (*see* Checklists 5 and 8)	
Develop training package for potential team members	
Conduct training programs	
Arrange participation in exercises	

CHECKLIST 3—VISUAL INSPECTION MISSION CHECKLIST

Define area to be inspected	
List information needs	
Select suitable type(s) of vehicle	
Select observer team(s)	
Nominate Team Leader(s)	
Plan inspection route	
Arrange team transport	
During inspection	
To departure point	
From return point	
Decide schedule	
Call out time	
Briefing time	
Departure time and duration	
Debriefing	
Prepare equipment (*See* Checklist 4)	
Reporting arrangements	
Urgent reports	
End of mission reports	
Plan briefing (*See* Checklist 5)	
Plan debriefing (Use Checklist 9 as a guide)	

CHECKLIST 4—VISUAL INSPECTION TEAM EQUIPMENT CHECKLIST

Area maps (preferably laminated)	
Water soluble markers for laminated maps	
Notebooks or pads	
Pencils/pens	
Binoculars	
Camera and spare film	
Fluids (coffee/tea and water)	
Rations	
Anti-motion sickness tablets (air and sea inspections)	
Sick bags (for aerial inspections)	
First aid kit (land and sea inspections)	
Personal equipment	
Sunglasses	
Suitable clothing	

CHECKLIST 5—VISUAL INSPECTION BRIEFING CHECKLIST

Team composition	
Team Leader	
Team member responsibilities	
Responsibility for briefing pilot/driver/coxswain (if not at main briefing)	
Purpose of mission	
Area to be inspected	
Priority areas	
Route/Sequence of coverage	
Information needs	
Recording and post-mission reporting arrangements	
Emergency or high priority reporting arrangements	
Visual inspection techniques	
Arrangements for requesting further check of sightings	
Seating arrangements	
Arrangements for relief of observers on long missions	
Safety briefing	
Debriefing arrangements	

CHECKLIST 6—SURVEY MISSION CHECKLIST

Define area to be surveyed	
Identify any priority areas	
List the information already available	
Define information needs	
Prioritise information needs	
Check survey team members available	
Decide number and sizes of teams to be deployed	
Decide distribution of specialised skills among teams	
Nominate team(s)	
Decide survey timetable	
Identify time constraints	
Transport arrangements	
During survey	
To and from survey areas (if required)	
Route(s)	
Timings	
Briefing time	
Departure time and duration	
Communications	
Equipment	
Contacts and schedules	
Emergency arrangements	
Team equipment (*see* Checklist 7)	
Prepare briefing (*see* Checklist 8)	
Reports	
Debriefing (*see* Checklist 9)	

CHECKLIST 7—SURVEY TEAM EQUIPMENT CHECKLIST

Maps (laminated if possible with markers)	
Survey Forms	
Stationery (pens, pencils, notebooks, clipboard folders etc)	
Waterproof folders or bags to protect key documents	
Digital or roll-film camera	
Computer(s)	
Communications equipment (radios, satphone, mobile phones)	
Global Positioning System (GPS) equipment	
Identification/authorisation documents for each team member	
Explanatory documents (with translations if needed)	
Written briefing material (standard instructions, available info, area info etc)	
Team first aid kit	
Backpacks	
Rations	
Water bottles	
Shelter *(tents, sleeping bags, mosquito nets, protective clothing as needed for the climate and circumstances)*	
Cash float for team leader	
Local contacts list	

CHECKLIST 8—SURVEY BRIEFING CHECKLIST

Team composition	
Team leader	
Team member responsibilities	
Purpose of mission	
Area to be surveyed	
Priority areas	
Details of event and known information	
Information needs (Purpose, sectors)	
Survey methods	
Key contacts in survey area	
Information recording (use of survey forms etc)	
Standard terminology	
Level of detail required	
Reporting requirements	
During mission (methods, frequency, content)	
On completion	
Emergency and urgent reports	
Communications	
Schedules, callsigns etc for contact with base	
Within team	
Transport arrangements	
Team health and safety and actions in an emergency	
Dealing with urgent requests for immediate assistance	
Media contacts	
Equipment information/briefing	

CHECKLIST 9—SURVEY MISSION DEBRIEFING CHECKLIST

General situation in affected area	
Major impacts	
Secondary threats (health, flooding etc)	
Affected population (morale, attitude, vulnerability)	
Comments on casualties and expectations	
Major damage	
Major needs identified and priorities	
Response capabilities and resources in area	
Response actions being carried out	
Major external assistance needs	
Logistical factors affecting external response	
Recommended priorities for response	
Recommended further actions (surveys, recovery and rehabilitation measures)	
Problems experienced	
Recommendations for improving survey procedures	
Other comments	
Complete expense claims, acquit funds etc	

FICTITIOUS SAMPLE POST–DISASTER ASSESSMENT REPORT

INITIAL POST–DISASTER ASSESSMENT REPORT

Place: Karratha/Dampier, WA **Time/Date:** 1400/29 October 2000

General Description: Tropical Cyclone Bogus crossed the coast approximately 120 km west of Port Hedland early in the afternoon of 28 October 2000. Karratha Airport recorded winds of more than 100 km per hour from shortly after midnight on 28 October and more than 150 km per hour from mid-morning. Winds dropped overnight and were less than 20 km per hour during the survey period. Torrential rain fell as the cyclone passed and heavy rain is still falling in the area. There has been flash flooding of most waterways. High seas and a storm surge approximately 2 metres high inundated Karratha and parts of Dampier during the day. Survey teams active since first light and following is report to this time.

Casualties

Dead: 3 (2 from flying debris, 1 heart attack)

Missing: 5+ (5 fishermen reported not returned, car with unknown number of occupants seen being washed away in flash flooding near Karratha and not yet located)

Major Injuries: 14. (8 evacuated to Port Hedland, 6 being treated locally but need evacuation in due course)

Minor Injuries: 47 to 12.00 noon but others still coming for treatment.

Shelter: 135 people sheltering in Karratha High School Evacuation Centre; 53 in Dampier Primary, and approximately 200 various other Karratha evacuation centres. Many others sheltering with other families but may need shelter in due course.

Damage

Houses: 17 Destroyed, 63 Severely damaged, 178 Moderately damaged, 70 per cent of remainder have minor damage.

Hospital: Nickol Bay Hospital operating theatre, X-Ray facilities and surgical ward destroyed. Roof damage to remaining wards temporarily repaired with tarpaulins but alternative accommodation needed. Pharmacy and dispensary damaged—supplies being checked but many lost. Only generator power available. Only one ambulance operating.

Police Station: Moderately damaged but operating.

Fire Station: Destroyed with all fire vehicles except LandCruiser unusable.

Shire Offices: Severely damaged, no power.

Lifelines

Electricity: Power off. Main generator house flooded but being drained. Damage to generators not known. Many power lines down, streetlights bent and broken. 2 line crews deployed so far.

Water: Off. Mains water off due loss of power and damage to standby generators. Overland supply failed—believed pipe break inland. Purification plant needed after repair.

Sewerage: Not operating.

Communications: Telephone exchange water damaged. No Telstra lines working. Limited mobile services. Emergency Service radios working but overloaded.

Food Stores: Power to all supermarkets off. Frozen and chilled foods not considered safe for consumption. Population advised not to use food in domestic freezers and refrigerators.

Transport Systems

Roads: Great Northern Highway is cut in at least three places between Karratha and Roebourne and also 18 km west of Dampier. Many roads in low-lying parts of Karratha have been broken up or washed away by storm surge. Debris across suburban roads being cleared locally. Minor rural roads not yet assessed but evacuation helicopters report many washaways.

Airports: Some cracking of Karratha runway but engineers advise it is safe for up to BAe146 performance aircraft. All aircraft had evacuated before storm so no aircraft damage. All navigation aids out of action but standby VHF radio operating.

Ports: Storm surge and wave damage in Dampier port area. Port closed until marine survey complete. Ore loader suffered wind damage. Some small craft sunk or beached. One tug holed but still afloat. Some buoys missing and others appear to have moved. Some leading marks blown down.

Railways: Railway from Tom Price cut by floods in at least three places.

Available Resources

Medical: 5 doctors, 9 nurses and most hospital staff safe. Out patients and emergency ward accommodation available. Temp operating theatre available. Medical supplies shortage—particularly for minor injuries. 2 private doctor surgeries available.

Emergency Services: 1 LandCruiser fire appliance, 4 Police vehicles and 2 WASES vehicles available; emergency radio system operating. 2 police, 3 WASES injured during storm, remaining police, fire and SES personnel safe but over worked.

Plant: Mining and salt company plant available for road clearing. One forklift available on wharf.

Miscellaneous: Some roof repair materials available but more needed. Reasonable supplies of dry foods and commercial suppliers will restock as soon as roads clear.

Needs:

Medical and Health: Evacuation of remaining serious injuries. First aid supplies for minor injuries, antiseptic solution, analgesics; tetanus injections, water purification tablets. Relief doctors, nurses and first aiders for 1 week to relieve local staff.
2 supplementary environmental health staff to assess secondary risks. Water test kits.

Shelter: 300 tarpaulins 5 m x 5 m for roof repairs. Nails, timber and hand tools. Timber and iron to repair hospital wards (2 large marquee tents as temporary alternative). Bedding for 500 people for evacuation centres. Clothing and kitchen equipment to assist families.

General: Building tradesmen needed to assist with repairs. Mobile crane to assist debris removal. Fork lift needed at airport if supplies flown in. Emergency generators needed for hospital, evacuation centres and food storage. Relief emergency service workers would be welcome.

Outlook

Community morale generally good and people making every effort to make immediate repairs and start towns working again. Local emergency management system working well but some relief workers in all categories would be useful. Full coordination meeting planned pm 29 October. Sufficient plant available to meet immediate needs but spares for some damaged equipment are likely to be needed when mechanical assessment completed. Hospital and road repairs likely to be long-term priorities.

GLOSSARY

Analysis

The critical examination of information and its resolution into simple elements that will assist decision-making.

Assessment

The organised process of collecting information after an emergency or disaster and processing it in order to estimate actual or expected casualties and damage and the needs of the affected community for response, recovery and future prevention and preparedness assistance.

Baseline Information

Information on the normal structure and characteristics of a community. It can be compared with post disaster information when making decisions about response and recovery activities.

Casualties

The human impact of a disaster or emergency presented in the form of numbers of people killed, injured, sick, missing or homeless.

Collation

The bringing together and classification of data into organised information.

Credibility

The likelihood that particular information is true.

Damage

The material impact of a disaster or emergency presented as a description of the degree to which objects or facilities are affected.

Damage Classification

Evaluation and recording of damage to structures, facilities, resources or objects using pre-determined categories.
(Eg 'destroyed', 'severely damaged', 'moderately damaged', 'slightly damaged')

Data

Raw unprocessed facts.

Disaster

A serious disruption to community life that threatens or causes death or injury in that community and/or damage to property, the environment and/or economic activity that is beyond the day-to-day capacity of the prescribed statutory authorities and which requires special mobilisation and organisation of resources other than those normally available to those authorities.

Emergency

An event, actual or imminent, which endangers life, property or the environment, and which requires a significant and coordinated response.

Emergency Management

The organisation and management of resources for dealing with all aspects of emergencies.

Emergency Manager

A generic term used in this manual to describe a person responsible for making decisions in relation to preparedness for, response to, recovery from or reconstruction after emergencies or disasters. It includes, but is not confined to, officials nominated as chairmen, managers, controllers, commanders or coordinators in the various states and territories.

Evaluation

Post-event appraisal of all aspects of an emergency or disaster and its effects.

Incident

An event, accidentally or deliberately caused, which requires a response from one or more of the statutory emergency services.

Information

Data that has been collated and presented in an organised form.

Lifelines

The facilities and systems that provide basic life support services such as water, energy, sanitation, communications and transportation.

Mitigation

Measures taken in advance of a disaster aimed at decreasing or eliminating its impact on society and the environment.

Needs

The resources needed by a community or communities affected by an emergency or disaster to enable them to survive in the short term (response needs) and return to normal community life in the long term (recovery needs).

Observer

A member of a properly briefed Visual Inspection Team.

Preparedness

Activities designed to minimise loss of life and damage, to organise the temporary removal of people and property from a threatened location and facilitate timely and effective rescue, relief and rehabilitation.

Prevention

Regulatory or physical measures designed to eliminate or reduce the incidence or severity of emergencies.

Recovery

The coordinated process of supporting emergency or disaster affected communities in reconstruction of the physical infrastructure and restoration of emotional, social, economic and physical well-being.

Reliability

The level of confidence that can be assumed in the professional ability, honesty and objectivity of a source of information.

Response

Action taken in anticipation of, during, and immediately after an emergency or disaster to ensure that its effects are minimised, and that people affected are given immediate relief and support.

Sector

A sphere of activity in which a range of agencies and individuals work on similar issues, e.g. the Health Sector, the Food Sector. Some authorities may use the terms 'function' or 'functional area'.

Survey

The organised physical collection of information on the impact of an emergency or disaster and the needs of the affected community or communities.

Survey Team

A briefed group of persons carrying out a survey of a pre-determined area.

Visual Inspection

A general survey of an area believed to have suffered casualties or damage caused by a hazard in order to identify the major impacts and the extent of the affected area.

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