



**CabinetOffice**

# Enhanced SAGE Guidance

A strategic framework for the Scientific Advisory Group  
for Emergencies (SAGE)

## Contents

Acronyms .....	1
Introduction .....	2
Aims and objectives .....	3
Intended audience .....	4
Using this guidance.....	5
Development of this guidance.....	8
Part One: Scientific and technical advice during emergencies .....	9
Local level.....	9
The Lead Government Department Concept .....	9
Departmental / Devolved Administration only (or Level 1) emergencies.....	9
UK Cross-government (or Level 2 and 3) emergencies .....	10
Overseas emergency with UK impacts .....	10
Part Two: The Role and Governance of SAGE.....	12
SAGE aims and objectives .....	12
Governance of SAGE .....	13
Assurance .....	16
Flexible structure.....	17
Part Three: SAGE activation and de-activation.....	18
Activating SAGE .....	18
Defining SAGE membership .....	18
Defining the governance structure of SAGE .....	21
Handover arrangements from pre-existing groups to SAGE .....	21
Deactivating of SAGE .....	22
Part Four: Organising SAGE.....	23
Ensuring transparency and protecting sensitive information.....	23
Contributing to situational awareness .....	24
Ensuring that policy decision are informed by scientific and technical advice.....	25
Ensuring communications are informed by scientific and technical advice .....	26
Drawing on other types of advice.....	27
Funding SAGE activities .....	29
Flexible approach.....	30
Part Five: Interactions between SAGE and STACs .....	31
Circumstances where SAGE and STACs might operate in parallel .....	31
Timescales for SAGE and STAC activation .....	32
Principles for SAGE / STAC interaction .....	32
Assurance .....	33
Defining SAGE, STAC interactions .....	33
Default interaction model .....	34
Pragmatic arrangement for overcoming interaction issues .....	35
Multiple STAC interaction .....	38
Part Six: The Interaction between SAGE and Devolved Administration advice groups .....	39
The interaction between Devolved Administration advice groups and SAGE (if active) .....	39
Requesting assistance and dealing with these requests.....	40
Scientific coordination arrangements in Scotland .....	40

Scientific coordination arrangements in Wales .....	41
Scientific coordination arrangements in Northern Ireland .....	42
Part seven: Dealing with requests for assistance and concerns .....	44
Reasons for requests for assistance and concerns .....	44
Principles for dealing with requests and concerns .....	44
Principles for asking for assistance or raising concerns.....	44
Options for providing assistance in situations where COBR is active .....	45
Options for providing assistance in situations where COBR is not active .....	45
Providing support and assistance outside of the COBR mechanism .....	45
Annex A: Underpinning definitions .....	46
Annex B: Overarching principles.....	49
Annex C: Consultation approach .....	55
Annex F: ECOSA and its handover procedures.....	59
Annex G: Guidance on producing a funding issues paper .....	64

## **Figures**

1	<i>The COBR Mechanism</i>	11
2	<i>SAGE Governance structures</i>	14
3	<i>Managing information flows between the intelligence cell and SAGE</i>	28
4	<i>Default SAGE, STAC interaction model</i>	34
5	<i>Lead STAC concept</i>	35
6	<i>Pooling scientific resources between SCGs</i>	37
7	<i>Pooling and marshalling scientific resources between SCGs</i>	37

## **Tables**

1	<i>The role of scientific and technical advice in emergency management</i>	7
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## Acronyms

The table below provides a list of the acronyms used in this guidance.

CBRN	Chemical, Biological, Radiological and Nuclear
CCS	Civil Contingencies Secretariat
CMO	Chief Medical Officer
CONOPS	Responding to Emergencies, the UK central government response – concept of operations
COMAH	Control of Major Accident Hazards Reg 1999
CRIP	Commonly Recognised Information Picture
CRR	Community Risk Register
CSA	Chief Scientific Advisor
CT	Counter Terrorism
CVO	Chief Veterinary Officer
COBR	Cabinet Office Briefing Rooms
DA	Devolved Administration
DV	Developed Vetting
ECOSA	Emergency Co-ordination of Scientific Advice
ERR	Emergency Response and Recovery Guidance
FAQs	Frequently asked questions
GCSA	Government's Chief Scientific Advisor
HazMat	Hazardous Materials
LGD	Lead Government Department
LRAG	Local Risk Assessment Guidance
LRF	Local Resilience Forum
NCC	News Coordination Centre
NSC	National Security Council
NSC (THRC)	NSC Sub-Committee on Threats, Hazards, Resilience and Contingencies – (Formally Civil Contingencies Committee )
NSC (THRC)(O)	NSC Sub-Committee on Threats, Hazards, Resilience and Contingencies (Officials)
NRR	National Risk Register
SAG	Scientific Advisory Group
SAGE	Scientific Advisory Group for Emergencies
S&T	Scientific and Technical
SCG	Strategic Coordination Group
Sitrep	Situation report
SPI	Scientific Pandemic Influenza group
STAC	Scientific and Technical Advice Cell

## Introduction

1. Effective emergency management and informed decision-making relies upon Ministers having access to the best available advice in a timely fashion. To ensure the full range of issues are considered advice needs to stem from a range of disciplines, including the scientific, technical, economic and legal. This guidance focuses on the coordination of **scientific and technical** advice to inform strategic UK cross-government decision making during the emergency response and recovery phases.
2. Both “*Responding to emergencies, the UK central government approach response, and concept of operations*” (CONOPS)<sup>1</sup> and the *Emergency Response and Recovery* (ERR)<sup>2</sup> guidance provide an emergency management framework for the UK<sup>3</sup>. This UK framework includes structures for coordinating scientific and technical advice during emergency response and recovery. At the UK level the Scientific Advisory Group for Emergencies (SAGE) is responsible for coordinating and peer reviewing, as far as possible, scientific and technical advice to inform decision-making. At the local level Scientific and Technical Advisory Cells (STACs) provide advice to local Strategic Coordinating Groups (SCGs) and/or Recovery Coordinating Groups (RCGs) which respond to the local consequences and manage local recovery efforts.
3. Since the development of the SAGE and STAC concepts both have been activated in real emergencies and tested via exercises. SAGE was activated during the 2009 H1N1 influenza pandemic, during the 2010 volcanic ash disruptions and the Fukushima nuclear incident in 2011. STACs have been activated for a number of events, including the 2008 Cumbrian flooding. These activations and exercises have highlighted both good practice and lessons for the future. In addition a number of lessons on the coordination and use of scientific and technical advice have been identified in tier one (UK cross-government) emergency exercises. This guidance

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<sup>1</sup> [http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi\\_scan\\_F8D0BFE83951C3DA=0&bcsi\\_scan\\_filename=conops-2010.pdf](http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi_scan_F8D0BFE83951C3DA=0&bcsi_scan_filename=conops-2010.pdf)

<sup>2</sup> <http://www.cabinetoffice.gov.uk/media/353478/err-guidance-050410.pdf>

draws on this experience and is designed to enhance the overarching UK framework for emergency management and should be read in conjunction with CONOPs and/or ERR, local STAC guidance and guidance on crisis management arrangements in the Devolved Administrations (DA)<sup>4</sup>.

### **Aims and objectives**

4. Specifically, this guidance aims to:

- clarify what is meant by evidence based decision making and scientific and technical advice;
- clarify when the provision of coordinated scientific and technical advice may be appropriate;
- set out how scientific and technical advice will be coordinated and provided from the outset of emergencies to recovery;
- further clarify activation, organisation, funding and deactivation arrangements for SAGE;
- identify the potential anticipated outputs and products from SAGE;
- clarify the handover and transition arrangements between SAGE and other scientific advisory groups during activation and deactivation;
- clarify the principles of interaction between SAGE and STACs and other scientific and technical advice arrangements, including those used in the Devolved Administrations (DAs), as appropriate;
- reflect on lessons identified and highlight good practice; and

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<sup>3</sup> CONOPs is targeted at government departments whilst ERR is targeted at local emergency planners and responders. The Devolved Administrations each have their own emergency management arrangements which are covered in both CONOPs and ERR.

<sup>4</sup> CONOPS: [http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi\\_scan\\_F8D0BFE83951C3DA=0&bcsi\\_scan\\_filename=conops-2010.pdf](http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi_scan_F8D0BFE83951C3DA=0&bcsi_scan_filename=conops-2010.pdf) and ERR: <http://www.cabinetoffice.gov.uk/media/353478/err-guidance-050410.pdf>

- be both flexible and scalable so it can be applied to all emergencies (as defined by the Civil Contingencies Act 2004)<sup>5</sup>.

### **Intended audience**

This guidance is primarily designed to be used by the key customers and providers of strategic scientific and technical advice at the UK cross-government level (see below).

#### **Providers of advice:**

- government advisory and regulatory agencies;
- external experts (including academics, industry and international experts);
- existing advisory groups (including departmental and Devolved Administration led groups, cross-government scientific advisory groups (SAGs); and
- external advisory groups and networks).

#### **Customers of advice:**

- The Cabinet Office Briefing Room (COBR) mechanism - which comprises of Ministers and Government Departments (COBR may seek advice on emergencies in the UK or on emergencies that have occurred overseas that have an impact on UK interests.)
- Devolved Administrations;
- local decision makers; and
- STACs (if active).

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<sup>5</sup> See [www.statutelaw.gov.uk](http://www.statutelaw.gov.uk)

## Using this guidance

5. This guidance is designed to be applicable for all emergencies as defined by the Civil Contingencies Act. It is not intended to be prescriptive and it should instead be applied flexibly to fit the specific circumstances. Throughout this guidance the phrase: **'scientific' and 'technical advice'** is used to encompass a whole spectrum of advice including both the natural and social sciences. **'Advice'** is taken to comprise a combination of analysis, assessments, evaluation and/or expert opinion. A detailed definition of the advice and decision making process which underpins this guidance can be found at **annex A**.
6. This guidance **does not** cover the coordination, provision or use of other types of advice during emergencies, such as economic assessments and information from the intelligence agencies. Nor does it cover arrangements for STACs as this is already covered in detail by other guidance.<sup>6</sup> (STACs are the responsibility of local emergency planners and they should factor arrangements for these into their emergency preparations).
7. It is also important to note that this guidance covers one element of a much wider process of harnessing scientific and technical advice during emergency management (i.e. this guidance covers only the response and recovery phases of emergency management and only UK level coordination). **Table 1** below provides an overview of the coordination of scientific and technical advice during all phases of emergency management and at all levels.
8. It is good practice for all scientific and technical advice to be continuously reviewed to reflect the latest evidence and lessons learnt. Where possible advice provided during an emergency should build-upon advice, evidence and research formulated during the risk assessment, planning and preparation phases and should be reviewed and incorporated into plans and guidance following the emergency. This evaluation

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<sup>6</sup> Phase 2 of the amplified science project will review local STAC guidance.



process should be documented and archived. Generic principles for emergency management, which underpin this guidance, can be found at **annex B**.

9. To ensure flexibility and continuity, advice mechanisms operating at all stages of emergency management (i.e. risk assessment, planning, response and recovery) and at all decision-making levels (e.g. local, departmental, Devolved Administration and UK) should be both complimentary and interoperable. Advice mechanisms at each decision-making level will sometimes operate in parallel with mechanisms operating at other levels and may need to be scaled or adapted to fit circumstances. For this reason, although this guidance is focused on SAGE, it will be useful for those planning and organising scientific and technical advisory groups at different decision-making levels and stages of emergency management.
  
10. The document is structured as follows:
  - **part one** - provides an overview to arrangements for coordinating scientific and technical advice during emergencies, illustrating how SAGE fits into wider COBR structures;
  
  - **part two** – clarifies the role of SAGE and its governance arrangements;
  
  - **part three** – outlines arrangements for activating and deactivating SAGE;
  
  - **part four** – outlines ways in which the SAGE secretariat can ensure SAGE fulfils its aims and objectives;
  
  - **part five** – clarifies how SAGE and STACs interact;
  
  - **part six** – clarifies how SAGE interacts with scientific and technical advice mechanisms in the Devolved Administrations for emergency response and recovery; and
  
  - **part seven** – clarifies how requests for assistance and concerns regarding the coordination of scientific and technical advice during emergencies can be managed.

**Table 1: The role of scientific and technical advice in emergency management**

Emergency management phase / level of decision making	UK Cross Government (i.e. level 2 and 3 emergencies <sup>7</sup> )	Devolved Administration only and Departmental (i.e. Level 1 emergencies)	Local <sup>8</sup>
Risk identification	<p><b>Coordinated by:</b> the Risk Assessment Steering Group.</p> <p><b>Informed by:</b> SAGs and external experts</p>	<p><b>Coordinated by:</b> Government departments and Devolved Administrations.</p> <p>Lead departments to</p>	<p><b>Coordinated by:</b> Local Resilience coordination mechanisms</p> <p><b>Informed by:</b> the Local Risk Assessment Guidance (LRAG), the National Risk Register (NRR) and local experts / responders.</p>
Risk Assessment			
Contingency building / planning	<p><b>Coordinated by:</b> the National Capability Programme<sup>9</sup> and departmental led planning programmes<sup>10</sup> coordinate cross-government planning. Lead departments to identify and establish a network of scientific and technical contacts for particular emergencies.</p> <p><b>Informed by:</b> SAGs and external experts.</p>	<p>identify and establish a network of scientific and technical contacts for particular emergencies.</p> <p><b>Informed by:</b> Scientific Advisory Groups (SAGs) and external experts, as appropriate.</p>	<p><b>Coordinated by:</b> Local Resilience coordination mechanisms</p> <p><b>Informed by:</b> Local risk assessments</p>

<sup>7</sup> **Annex D** provides an overview of level 1, 2 and 3 emergencies.

<sup>8</sup> In England and Wales LRFs is the principal mechanism for coordinating emergency preparations. In Scotland Strategic Coordinating groups fulfil this function and in Northern Ireland different arrangements apply.

<sup>9</sup> Generic planning

<sup>10</sup> Specific risk focused planning, for instance the Pandemic Influenza Preparedness Programme.

<b>Response and recovery</b>	Scientific Advisory Group for Emergencies (SAGE) OR advice from individual experts, as appropriate.		Scientific and Technical Advise Cells (STACs) OR advice from individual experts, as appropriate.
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### Development of this guidance

11. This guidance was developed in collaboration with the key customers of SAGE advice and Government advice providers (see, **Annex C** for details).

## Part One: Scientific and technical advice during emergencies

### Local level

12. Most emergencies do not require central or cross-government assistance. Emergency responders (as defined by the Civil Contingencies Act 2004<sup>11</sup>) and multi-agency Strategic Coordinating Groups (SCGs) are responsible for coordinating emergency response and recovery locally. Recovery Coordinating Groups (RCGs) are responsible for managing local recovery efforts. During an emergency SCGs and RCGs can draw on advice from individual agency and responder experts, or if considered appropriate, activate a Scientific and Technical Advice Cell (STAC) to coordinate advice. Guidance on the interactions between SAGE and STACs can be found at part five.

### The Lead Government Department Concept

For both emergency response and recovery there is a list of pre-designated departments who will provide leadership during the emergency<sup>12</sup>. Where the Lead Government Department (LGD), is unclear (e.g. because the emergency affects a number of sectors equally), a lead or a number of leads will be appointed by Cabinet Office, in consultation with the Prime Minister's office.

### Departmental / Devolved Administration only (or Level 1) emergencies

13. For level 1 emergencies (see **annex D** for a definition) central government assistance is provided primarily via the Lead Government Departments, Government Agencies and/or Devolved Administrations, as appropriate. Each of these organisations has their own emergency management mechanisms (set out in Section 1, of CONOPs<sup>13</sup> and in departmental response plans) which should include provisions for the coordination of scientific and technical advice from both within and outside government.

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<sup>11</sup> See [www.statutelaw.gov.uk](http://www.statutelaw.gov.uk)

<sup>12</sup> See <http://interim.cabinetoffice.gov.uk/sites/default/files/resources/lead-government-department-march-2010.pdf>

<sup>13</sup> [http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi\\_scan\\_F8D0BFE83951C3DA=0&bcsi\\_scan\\_filename=conops-2010.pdf](http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi_scan_F8D0BFE83951C3DA=0&bcsi_scan_filename=conops-2010.pdf)

## UK Cross-government (or Level 2 and 3) emergencies

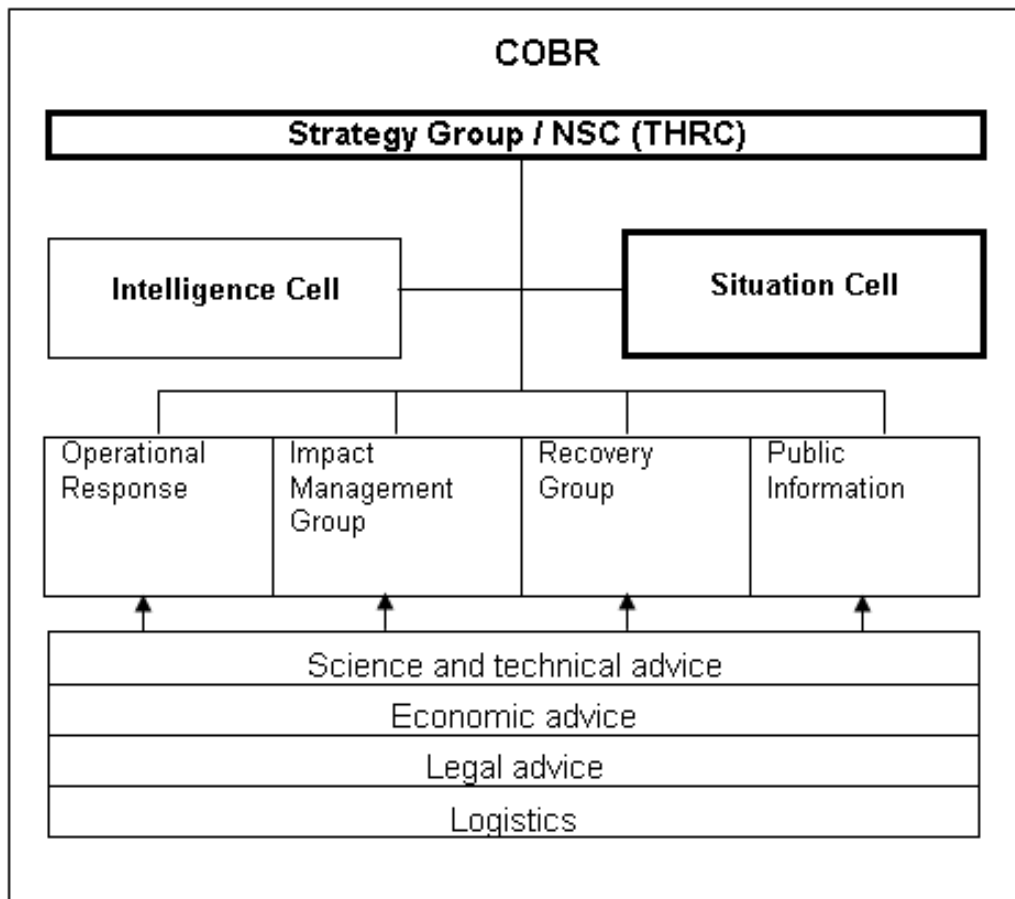
14. For level 2 or 3 emergencies (see **annex D** for definitions), cross government coordination (and direction in the case of level 3 emergencies) is required. In these circumstances the Cabinet Office and the Lead Government Department in consultation with the Prime Minister's office can activate the Cabinet Office Briefing Rooms (COBR) – for response, recovery or both.
  
15. This mechanism comprises a Ministerial decision making group (i.e. National Security Council, Threats, Hazards, Resilience, Contingencies (NSC (THRC) or Strategy Group) and a number of potential supporting elements (see **figure 1**). These supporting elements will always include an officials group (NSC (THRC)(O)) and a situation cell which maintain a Commonly Recognised Information Picture (CRIP). They can also include the provision and coordination of scientific and technical advice from both within and outside government. In emergencies where COBR is activated any combination of these elements, shown in figure 1 can be adopted, as appropriate. If required scientific and technical advice will either be provided by individual experts or, coordinated via a Scientific Advisory Group for Emergencies (SAGE), as appropriate. Guidance on the interaction between SAGE and scientific advisory groups in the Devolved Administrations can be found at part six of this document.

## Overseas emergency with UK impacts

COBR, where activated, may seek advice on emergencies that have occurred overseas which have an impact on UK interests, e.g. risk to British nationals overseas and any domestic impacts. The mechanism for coordinating this advice through SAGE will follow the same processes and triggers as for national emergencies and where relevant link to international alert mechanisms. The additional processes for gathering scientific and technical advice from international sources to inform decision making in COBR, will need to be considered early on in the response.

Where appropriate and endorsed by COBR, SAGE may share UK science assessments with international partners to help inform other national responses.<sup>14</sup>

**Figure 1: The COBR mechanism**



**Key:**

= Core elements in a minimum activation

<sup>14</sup> Expert scientific groups may also be convened to examine government plans and preparedness for international humanitarian emergencies. For more information please see The Use of Science Advice in Humanitarian Emergencies and Disasters (SHED report June 2012) <http://www.bis.gov.uk/go-science/science-in-government/global-issues/civil-contingencies/shed-report-2012>

## Part Two: The Role and Governance of SAGE

### SAGE aims and objectives

16. SAGE aims to ensure that coordinated, timely scientific and/or technical advice is made available to decision makers to support UK cross-government decisions in COBR.
17. Like COBR as a whole, SAGE is designed to be both flexible and scalable. It is likely that its precise role will evolve as the emergency develops and vary by the nature of the incident (e.g. its role may evolve with the transition from response to recovery). To achieve its aim SAGE can:
  - analyse, review or model existing data;
  - assess, review and/or validate existing research; and/or
  - where previous research is limited or non-existent, commission new research.<sup>15</sup>
18. It is likely that SAGE advice will be required on:
  - the scientific and technical concepts and processes that are key to understanding the evolving situation and potential impacts;
  - how the emergency might develop and the potential implications of this (i.e. what factors will affect how the situation develops? What are the potential scenarios? How likely are these scenarios? What are their impacts?);
  - possible ways to improve, monitoring, forecasting and assessment in the short to medium term;
  - potential scientific and/or technical solutions that can remove or mitigate the risks and/or manage the impacts, and the pros and cons of these. Advice on potential

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<sup>15</sup> To ensure quality advice that can be provided in a timely fashion, the aim should be to avoid this situation by formulating scientific and technical advice during the planning phase. The commissioning of new research will need to be considered and authorised by the relevant department which will take in to account the provision of funds.

solutions should outline any logistical issues or limitations (e.g. timing, the expertise and resources required) and the associated costs of these proposed solutions;

- the scientific and/or technical pros and cons of policy options identified by others;
- the degree of consensus (e.g. all, the majority, most, some or few experts agree);
- differences in opinion (i.e. are there differences in scientific / technical opinion and what are the sources of disagreements?); and
- the degree and cause of uncertainty (e.g. confidence levels, margins of error and the reasons for not being more certain).

19. Part Four provides further guidance on the potential tools which SAGE can use. Principles for providing scientific advice to government can be found at:

<http://www.bis.gov.uk/go-science/principles-of-scientific-advice-to-government>

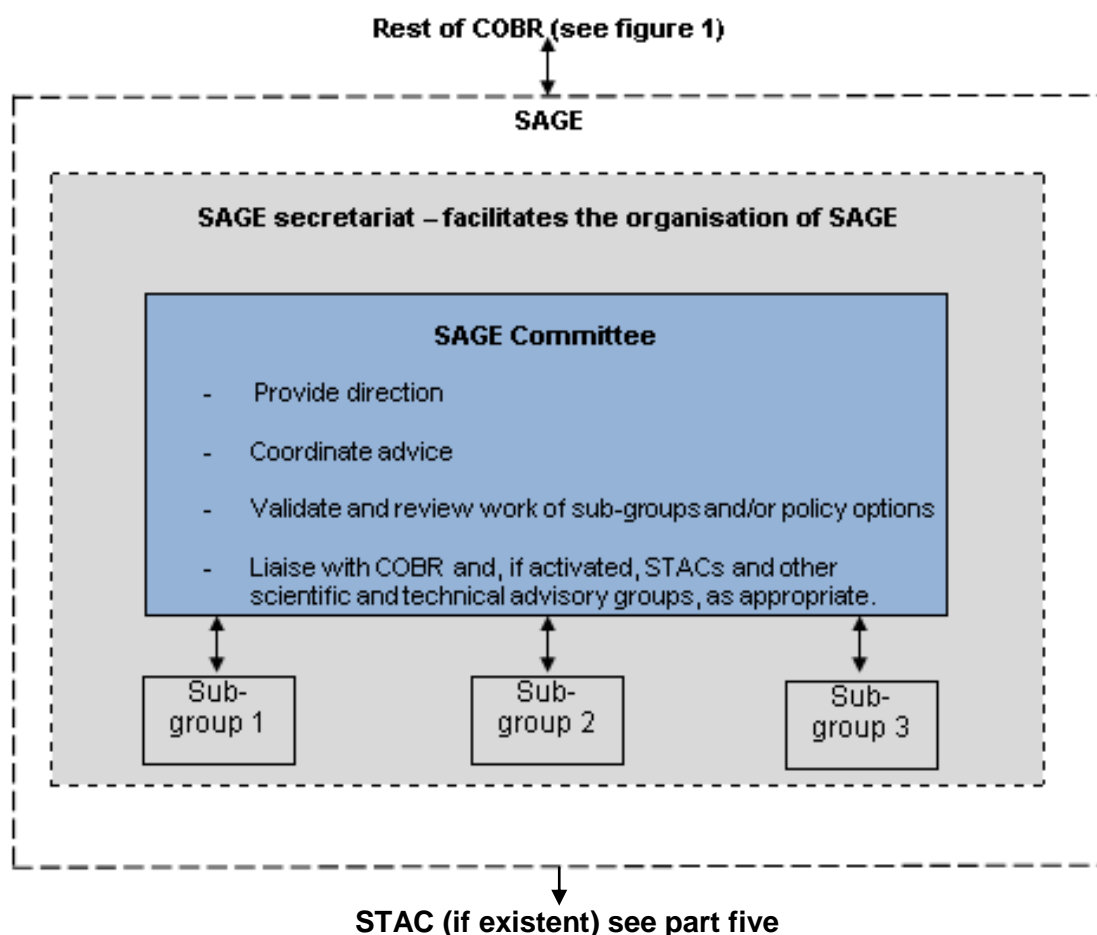
### **Governance of SAGE**

20. To enable SAGE to both review and validate research and undertake new assessments, analysis and modelling it is likely to be necessary to create sub-groups. The effective use of sub-groups can also help ensure that discussion groups within SAGE are of a manageable size. **Figure 2** provides a model governance structure for SAGE which should be applied flexibly, according to circumstances and the situation.
21. If activated, SAGE would report to, and be commissioned by, the ministerial and official groups within COBR. (The ministerial group is where collective UK cross-government decisions are made during emergencies and this is supported by the officials group which ensures that Ministers have access to the best available evidence and advice).
22. One or more SAGE representatives will attend the ministerial and/or official group to explain scientific and technical issues. This SAGE representative should be able to present and explain the full range of SAGE views, including from specialities that are



not their own. At ministerial meetings the Government’s Chief Scientific Advisor (GCSA) would usually be the SAGE representative.

**Figure 2: SAGE Governance structures**



### SAGE committee structure

23. SAGE will provide direction, coordinate advice and validate and review the work of its sub-groups. To ensure consistency it would also liaise with other scientific and technical advisory groups, as appropriate. This would include liaison with STACs (see part five) and could include departmental or scientific and/or technical advisory groups in the Devolved Administrations (see part six).
  
24. SAGE would usually be chaired by the Government’s Chief Scientific Advisor (GCSA) or a departmental CSA, as appropriate. When an existing scientific advisory group (SAG) which considers emergency management issues already exists and it is

incorporated into SAGE, it **may** be appropriate for the chair of this SAG to act as deputy Chair to SAGE. This arrangement could help ensure continuity.

### SAGE sub-groups

25. SAGE sub-groups should be established where discrete pieces of work are necessary. They will provide timely reports to SAGE. A chair for each sub-group should be appointed, with the responsibility of coordinating the discrete work.
26. To facilitate two-way communication between the SAGE committee and its sub-groups at least one member of each sub-group should attend SAGE meetings. This person could be the sub-group chair or another individual.
27. In attending both meetings this liaison person would be responsible for reporting back to the SAGE committee on sub-group progress, noting any actions for their sub-group and communicating this back and updating their sub-group on committee discussions.

### The SAGE secretariat

28. The role of the SAGE secretariat is to support SAGE and its sub-groups in coordinating and providing scientific advice that will help support ministers in making evidence based decisions. This role will include:
  - activating and deactivating SAGE;
  - providing a bridge between the SAGE committee and other elements of COBR;
  - ensuring transparency;
  - identifying, coordinating and managing the SAGE work programme – ensuring that SAGE is focused on policy and decision making needs;
  - supporting SAGE members to work with the media; and
  - facilitating information flows between SAGE and other advisory groups.

Part four provides guidance on how the SAGE secretariat can fulfil these functions.

29. Where there is a clear Lead Government Department this department would take the lead in providing a secretariat function. This would be supported by other Government departments and the Devolved Administrations that were customers of SAGE advice, where practical and as appropriate. Where there is no clear Lead Government Department the default arrangement would be Cabinet Office and Government Office for Science providing the lead in the SAGE secretariat. In all circumstances, Cabinet Office would be responsible for ensuring that SAGE had a UK cross-government focus whilst the Government Office for Science would be responsible for ensuring that SAGE drew upon an appropriate range of expertise and on the best advice available.

### **Assurance**

30. It is expected that each scientific advice provider takes responsibility for ensuring that the advice that they provide is based on the best available evidence and of a high quality. Ideally scientific and technical advice during emergencies should be based upon pre-formulated advice which has been subject to peer review and scientific and technical scrutiny. The SAGE secretariat will collate this “known, pre-formulated” advice, informally seeking assurances that it has been scrutinised and that known uncertainties are highlighted.
31. There will be circumstances where pre-formulated advice needs reviewing and revising as a result of the specific emergency circumstances or where new advice is needed because of unforeseen circumstances. There will also be circumstances where it is known that large uncertainties surround pre-existing advice. In filling these knowledge gaps, as far as it is possible, the SAGE committee should peer review the work of its sub-groups, to provide assurance. Where there is limited evidence to draw on, advice may rely, to a greater extent, on the judgement of SAGE members who are able to extrapolate from what they know and what they are less certain about. The best available evidence at the time of the emergency is what the advice provided should be based upon. If necessary and where time allows external scientific and technical scrutiny should be sought.

### **Flexible structure**

32. In some emergencies the lead for SAGE and its chair may change as the emergency develops. A change in chair could occur if the usual chair was absent for a variety of reasons (e.g. for general resilience, sickness, a change in focus and/or because of a transition from response to recovery). The LGD may change due to a change in focus or due to the transition from response to recovery.
  
33. Where the LGD and/or chair changes it is the responsibility of the outgoing chair / LGD to consider the needs of the incoming chair/LGD and to make appropriate handover arrangements.

## Part Three: SAGE activation and de-activation

### Activating SAGE

34. SAGE can only be activated by COBR in support of collective cross-government responses to and/or recoveries from level 2 or 3 emergencies (see **annex D**). Whether SAGE is needed should be considered when COBR is first activated and reviewed throughout the emergency. It is possible that scientific and technical advice will be required in some but not all phases of response and recovery.
  
35. The triggers for SAGE activation are a need for:
  - scientific and technical advice to help inform UK cross-government decision making;
  - the coordination of advice at UK Government level;
  - the cross-government coordination of scientific and technical advice for level 2 and 3 emergencies affecting the DAs (see Annex D);
  - focusing scientific and/or technical advice on the specific circumstances of the emergency; and
  - tailoring advice at UK cross-government decision makers.
  
36. Once the decision to activate SAGE has been taken, a SAGE secretariat should be formed to make practical arrangements (see part two).
  
37. In some emergencies, virtual SAGE activations or a staggered SAGE activation approach (i.e. CSA assemble first, then wider experts) may help speed SAGE activation.

### Defining SAGE membership

**For known risks**, the Lead Government Department should consider the likely membership of SAGE as part of their emergency planning during the preparation phase. Having departmental led Scientific Advisory Groups or equivalent groups in the Devolved Administrations during the planning phase is considered good practice

as this helps speed the SAGE activation process and ensures continuity. Where this is the case, this pre-defined list should form the starting point for defining SAGE membership. It may need to be supplemented and/or adapted according to the specific circumstances of the emergency and membership will need to be kept under review throughout the emergency. **For unforeseen level 2 and 3 emergencies**, the SAGE secretariat will need to define SAGE membership. In both cases, the LGD has a responsibility, in terms of contingency building and planning to identify and establish a network of scientific and technical contacts for particular emergencies that can be drawn upon for advice in emergencies.

38. The following **principles** should be applied when defining and reviewing SAGE membership:

- **Existing advisory groups and networks should be utilised** (This includes both Government and external networks including industry experts).
- **SAGE should not seek to replace or duplicate other advisory groups.** Its role is to coordinate advice from a number of sources and to ensure advice is targeted at decision-makers and focused on the specific circumstances of the emergency.
- **SAGE should include the most appropriate, rather than the most accessible experts** (i.e. those experts that are best placed to provide high quality, trusted, well-respected strategic advice rather than those that are the easiest to contact). The selection of experts should match the nature of the issues requiring advice.
- **SAGE should include representatives from a wide-range of appropriate scientific and technical specialities**, to ensure its advice is well-rounded. This should include both Government and external experts.
- **SAGE should not overly rely on specific experts** - Some flexibility is required in case experts are not available<sup>16</sup> and consideration should be given to avoiding the overburdening of particular experts during any prolonged SAGE activations.

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<sup>16</sup> This could be for a number of reasons, e.g. sickness and other commitments that cannot be rescheduled.

39. Where SAGE membership is drawn up in advance, during the preparation or response/recovery phase, Departmental and Devolved Administration Chief Scientific Advisors (CSAs) and departmental heads of analysis/ research (and their equivalents in the Devolved Administrations) should be consulted. If relevant, Chief Medical Officers (CMOs) and/or Chief Veterinary Officers (CVOs) should also be consulted. They in turn will consult others in the CSA, CMO and CVO networks and the Government's Chief Scientific Advisor (GCSA).

40. Departmental, Devolved Administration and non departmental government body CSAs (and CMOs and CVOs if relevant) are likely to form the initial core members of any SAGE. Other potential members include:

- **experts and analysts from Government department, the Devolved Administrations and Non Government Department Public Bodies** (e.g. from their expert advisory groups, such as Science Advisory Councils, Science Advisory Committee and Science Advisory Groups and/or internal research programmes or analysis units);
- **experts and analysts from externally commissioned research programmes;**
- **other external UK experts** which may be identified via research and funding councils, National academies, professional institutions and other learned societies, universities and private and voluntary sector research organisations;

*Annex E* provides a non-exhaustive list of potential SAGE members. This should be used as a starting point, rather than a definitive list.

41. Consideration should be given too:

- **whether communication experts should be included** to help SAGE communicate potential complex concepts and key messages to the general public, media and policy and decision makers;
- **the size of SAGE** – SAGE needs to contain a range of experts from a range of specialities. This needs to be balanced against a need to avoid an overly large SAGE. An effective use of SAGE sub-groups may help with this issue.

## Defining the governance structure of SAGE

42. Figure 2 on page 18 provides a model governance structure. Existing advisory groups (i.e. Government agencies and/or department led advisory groups (and the equivalents in the Devolved Administrations) or external groups), can in an emergency:

- **become SAGE** – where they are able to provide advice on all issues required and where they contain a full range of appropriate experts (see below);
- **form a sub-group of SAGE** – where they are able to provide advice on a sub-set of the issues required and where they contain a full range of appropriate experts on this/these issues; and/or
- **regularly communicate with SAGE** – where maintaining the independence of the group is considered essential or beneficial.

For all three options outlined above, existing groups can be supplemented by other experts drawn from other agencies or networks,<sup>17</sup> as appropriate.

## Handover arrangements from pre-existing groups to SAGE

43. Where existing advisory groups become SAGE or part of it, a transfer of knowledge should naturally occur, as some of the personnel will overlap to provide continuity. Where advisory groups plan to operate in parallel to SAGE, specific liaison and handover arrangements will be required. In these circumstances the SAGE chair is responsible for ensuring that this happens and for determining the best way of doing this. In practice, the chair will usually delegate handover arrangements to the SAGE secretariat.

44. ECOSA, the Home Office led arrangement for coordinating scientific advice in the first few hours of a suspect CT, CBRN incident is an example of a group that would cease to exist once SAGE or STACs were activated. For this reason handover arrangements for ECOSA to SAGE/STACS (or from any other bodies ceasing to exist

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<sup>17</sup> Including external groups and networks



once SAGE is activated) are particularly important. **Annex F** provides further details on ECOSA and its handover arrangements. This provides a good template for defining handover arrangements.

### **Deactivating of SAGE**

45. As with other emergency management arrangements the deactivation of SAGE should be clearly signalled and there should be an exit strategy. Given SAGE is part of COBR and its focus on coordinating advice during an emergency, SAGE would normally deactivate once there was no longer a need for UK cross-government decisions on emergency response or recovery.
46. In practice, defining the end of an emergency is often not clear-cut. In circumstances when there are difficulties in defining the end of an emergency or where continuing advice may be required to inform ongoing recovery and regeneration activities, after COBR has been deactivated, a cautious, phased approach to SAGE deactivation is usually taken to enable quick response and full reactivation, if events unexpectedly change. During this period of de-escalation it may not be necessary for SAGE and COBR to physically meet. Instead members will be kept on alert in case of the situation rapidly changing.
47. During these periods there may be some benefit in using the SAGE mechanism to evaluate the science or risk assessments to inform both future planning and any possible imminent developments. In these circumstances the funding and resource implications will need careful consideration as the removal of urgency can mean that resources and funding are more difficult to quickly obtain as it will be more difficult to justify spending.
48. When SAGE is deactivated an evaluation process should be triggered to review its performance and identify lessons and good practice. As part of this process, actions and those responsible for delivering them should be identified. In addition, because it is possible that emergency management continues in some nations, areas or sectors after COBR is stood down, it is important that when SAGE deactivates it considers specific liaison and handover arrangements with any SCGs, RCGs, departments and/or DAs.

## Part Four: Organising SAGE

### Ensuring transparency and protecting sensitive information

49. Transparency is an important element of democratic decision making and the evidence used to inform decision should be published. In accordance with this, SAGE papers and products should be published in accordance with the Freedom of Information Act<sup>18</sup>. In certain circumstances the MOD may be required to establish and chair a separate SAGE sub-group of security cleared individuals where the outcome is not published.

#### Publishing minutes and SAGE advice

50. The SAGE secretariat should ensure that minutes are recorded for both SAGE committee and sub-group meetings. Minutes should be prepared in accordance with standard practice for a scientific advisory committee. These should be cleared by SAGE members for technical accuracy. The SAGE secretariat should also act as the information manager for all SAGE products, storing and circulating them and publishing them as and when appropriate. It is likely that the policy development, national security and/or personal information FOI exemptions may apply and this may mean that some information needs to be redacted or omitted before publication. The timing of publication will also need to be considered, with the most appropriate timing, often being after the emergency is over.
51. Most emergencies attract significant media interest and experts are likely to want to talk about their work, the SAGE secretariat should provide SAGE members with clear guidance on confidentiality. This should explain what can and cannot be said for security reasons and the requirement to take account of the FOI Act.

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<sup>18</sup> The need to do this was highlighted in both the Independent review by Dame Deirdre Hine Review of the Government's response to the 2009 Influenza Pandemic and in the House of Commons Science and Technology Select Committee's report on its inquiry into Scientific Advice and Evidence in emergencies.

### Using SAGE experts to communicate scientific and technical information

52. The 2009 H1N1 pandemic illustrated the value of using experts to communicate key scientific and technical issues, as they were publically perceived as trusted and credible sources of information. During both the planning phase and response and recovery consideration should be given to the benefit of using SAGE experts to communicate messages.
53. In some emergencies and for some risks it may be appropriate to create a **SAGE communications strategy** which should be aligned to the overall strategic communications strategy set by Ministers through COBR. This would set out a strategy for SAGE communications with the public, media and decision-makers.

### **Contributing to situational awareness**

54. The situation cell within COBR is responsible for ensuring that there is a single, up-to-date, overview of the current situation as it evolves. To help achieve this, it coordinates information from a number of sources, via situation reports, to produce a Commonly Recognised Information Picture (CRIP). This CRIP is disseminated to decision makers and their supporting officials to ensure they all have access to the same information.
55. In coordinating the CRIP, the situation cell may need to draw upon scientific and technical advice. Where SAGE is activated, the SAGE secretariat will be responsible for ensuring that the situation cell has access to the latest scientific and technical advice, by sending situation reports as appropriate. This will involve working to the CRIP production timescales which will be determined by the nature of the emergency and communicated to contributors by the situation cell.
56. In more complex emergencies, SAGE will need to coordinate advice from a number of sources to coordinate a UK-wide **Scientific and Technical Situation Report (S&T SITREP)**. The key steps in collating a S&T sitrep are outlined below:

- the SAGE secretariat collating emerging advice on:
  - commonly understood elements from a range of sources (including STACs, if active), as appropriate to the situation;
  - uncertain or less understood elements from the SAGE committee and its sub-groups and any expert groups operating in parallel to it;
- the SAGE chair or co-chair signing off the S&T sitrep;
- the SAGE secretariat disseminating the S&T sitrep to:
  - the situation cell in COBR to inform the CRIP, in the same way that sitreps from other sources do; and
  - the scientific and technical advice community engaged in the emergency response/recovery effort to enable a common understanding of scientific and technical elements.

57. As with other sitreps, the S&T sitrep can be prepared on an exceptional or regular basis, as appropriate to circumstances. A standard and flexible S&T template should be used, with new information in each iteration clearly indicated (usually in red). Given the need to communicate with the scientific and technical advice community engaged in the emergency response/recovery effort, at least one version of it, should be suitable for wider circulation.

### **Ensuring that policy decision are informed by scientific and technical advice**

58. The policy functions in COBR (e.g. the policy cell, Impact Management Group and/or a Recovery Group) coordinate policy advice for the UK government. This includes advice on possible policy options and their pros and cons. Where appropriate this will need to include scientific and technical advice. To facilitate this it may be appropriate for SAGE to produce its own option and scenario papers. These papers are likely to take two key forms:

- **Option papers** - In many emergencies it may be appropriate for SAGE to submit policy option papers which outline potential scientific and technical solutions and

their pros and cons; and/or the scientific and technical pros on cons of options suggested by others.

- **Response scenario papers** - Where emergencies are long lasting and/or events develop in an unexpected way or are unforeseen, it may be helpful for SAGE to develop some **plausible** response scenarios, assessing their likelihood and potential impacts, to help shape and direct preparations. During both the 2010 volcanic ash disruptions and the 2009 H1N1 pandemic SAGE produced response scenario or planning assumption papers.

59. The production of SAGE papers must be coordinated within or between sub-groups and cleared by the SAGE committee. This process may need to be supported by the SAGE secretariat in liaison with the Devolved Administrations.

#### **Ensuring communications are informed by scientific and technical advice**

60. The public information function of COBR, which in the most complex emergencies will take the form of a News Coordination Centre (NCC), is responsible for ensuring that consistent messages are communicated. It also ensures that these messages are communicated in a way that minimises the risk of misinterpretation.
61. In emergencies with a scientific or technical dimension there will be a need to draw on expertise to explain key concepts and issues. In some emergencies it may be appropriate for SAGE to produce or contribute to a briefing book, frequently asked questions (FAQs) document and/or a communications strategy<sup>19</sup> (see below).

#### **Briefing book and FAQs**

62. An understanding of the key scientific and technical issues is often critical to understanding how best to manage an emergency and explaining policy decisions. Where the scientific issues are particularly technical or complex or concepts are commonly misunderstood there may be benefit in SAGE contributing to a briefing

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book and/or FAQ,<sup>20</sup> targeted at the media, public and/or decision makers and their supporting officials.

63. Although it is anticipated that both a briefing book and a FAQs document could be useful, careful consideration is needed to ensure that there is not unnecessary duplications and that both products are fit for purpose.
64. For a briefing book or FAQ to be useful they need to clearly and concisely explain the concepts and issues. Consideration should be given on the best way to draw on communication expertise. This should ensure that the key scientific or technical messages are not lost or misinterpreted. The options for drawing on communication expertise are:
- embedding a communications expert in SAGE;
  - embedding a SAGE expert in the communications functions of COBR; or
  - two-way liaison between the COBR communications functions and SAGE.

### **Drawing on other types of advice**

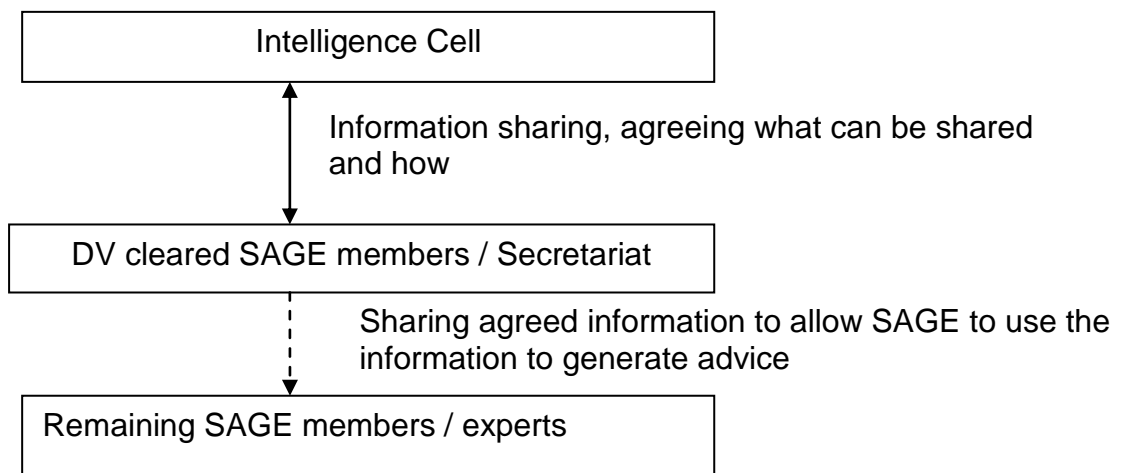
65. The legal, logistics and intelligence cells, if activated, coordinate advice on these issues. As such these cells perform a similar function to SAGE and it will be the role of the policy function within COBR to coordinate the advice from these bodies to form a consolidated overview of policy options and their pros and cons and to ensure that ministers receive coherent and rounded advice from a range of relevant sources. Even where issues are outside their statutory competence, liaison with the Devolved Administrations will still be required on legal and consequence management matters. This should be channelled through the individual DA crisis management structures and where appropriate the DA representative on SAGE.

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<sup>20</sup> A Briefing document uses a standard pros format and an FAQ uses a question and answer format.

66. Information coordinated by the intelligence cell is likely to be useful for informing and framing scientific advice and may need to feed into SAGE or to scientific experts where SAGE is not active. For classification reasons only individuals with DV clearance would be able to receive these intelligence feeds and secure communication lines (e.g. Brent telephones and faxes and/or COBR-LAN) would be required. In an emergency scenario there will however be aspects of this information that can be shared with “trusted experts” to enable them to provide advice which will inform emergency response policy decisions.
67. To facilitate the information flow between the intelligence cell and SAGE (or experts) it is critical that those preparing for emergencies that might need intelligence feeds, plan to include at least some DV cleared SAGE members and consider the need for secure communication links. The GCSA and some potential members from Government agencies and departments may have DV clearance. It is not however necessary that all potential SAGE members for these circumstances are DV cleared (see **figure 3**). The SAGE secretariat working closely with DV cleared SAGE members will need to work closely with the intelligence cell to agree what information needs to be shared more widely and how this might be achieved.

**Figure 3 Managing information flows between the intelligence cell and SAGE**



## Funding SAGE activities

68. Given SAGE relies largely upon the good-will of many experts; provisions should be made to cover appropriate personal expenses quickly and efficiently. However, given the need to ensure that SAGE remains focused on supporting UK cross-government decision-making other costs should be considered on a business case basis.
69. Where there is a clear LGD, this department would provide the lead in ensuring that there is adequate funding for the provision of SAGE activities. This may involve the use of its own budget or drawing on other available funding sources. The likely funding needs of SAGE should be considered by LGDs during the planning phase.
70. Where a DA asks for SAGE to be established to provide scientific and technical advice for an emergency relating solely to that DA area, the DA concerned will agree with Cabinet Office and Government Office for Science the principles for funding depending on the prevailing circumstances and SAGE actions required (see part four). The same principle will apply to any other UK departmental machinery used for this purpose.
71. Where there is no clear LGD, attempts should be made to reach a consensual financial solution between the key customers of the advice being provided. This could involve each advice customer contributing to a collective SAGE funding pool or costs being split proportionate to the benefit received.
72. If a consensual solution cannot be met, SAGE should produce a SAGE funding issues paper. This paper should be coordinated by the SAGE secretariat and submitted to the COBR secretariat (the Civil Contingencies Secretariat). The COBR secretariat would then make a call on how best to raise the paper within COBR. To inform this decision, the timeliness of any funding issues should be flagged by SAGE. **Annex G** provides a template for an effective funding issues paper.



### **Flexible approach**

73. The activities described above are not an exhaustive list or intended to be prescriptive. Once activated SAGE should consider how it can best achieve its aims and objectives given the specific circumstances and consider whether the tools listed above or any others are required. The resource implications of using any tool should be considered to ensure that the use of any tools is not detrimental to SAGE fulfilling its aims and objectives.

## Part Five: Interactions between SAGE and STACs

### Circumstances where SAGE and STACs might operate in parallel

74. In most circumstances SAGE and STACs will **not** operate in parallel. This is because:
- in most emergencies UK cross-government decisions or coordination is **not** required;
  - where UK cross-government decisions or coordination are required, scientific and technical advice is not always required at **both** the UK and local level; and
  - there is not always a need for a coordinating mechanism for scientific and technical advice (i.e. a STAC or SAGE) at both levels – where the number of experts is small advice can be fed into decision-making by individual experts.
75. However, both STAC(s) and SAGE may operate in parallel if:
- scientific and technical advice is needed to inform both strategic UK cross-government and local decisions;
  - coordination of this advice is required at both levels (as determined by COBR and SCGs/RCGs respectively); and
  - strategic scientific and/or technical advice needs to be interpreted locally to inform local decisions (e.g. for more specific and/or detailed advice).
76. For instance both SAGE and STAC(s) may be required for:
- CBRN (terrorist and accidental hazards) emergencies with distinct situational variations;
  - wide area flooding events with significant variations in risks and/or consequences by area;
  - multi risk emergencies with different consequences in different areas; and
  - emergencies that cross national borders and have significant local operational issues that require scientific and/or technical advice.

## **Timescales for SAGE and STAC activation**

77. In scenarios where both SAGE and STACs are activated, STACs will normally activate first. This is partly due to difficulties in quickly assembling the eminent experts that will make-up SAGE, but also because the need for UK-wide decision making will not always be apparent in the early stages of an emergency. (During these early stages central government would be monitoring the situation, with local responders leading the response). Virtual SAGE activations or a staggered SAGE activation approach (i.e. CSA assemble first, then wider experts) may help speed SAGE activation.

## **Principles for SAGE / STAC interaction**

78. Where both SAGE and STAC(s) exist in parallel the following principles should be applied:
- STACs should support local decision making, whilst the focus of SAGE should be to support UK cross-government strategic decision making;
  - STACs will focus on 'pre-prepared known' whilst SAGE will focus on more uncertain advice where there are knowledge gaps;
  - SAGE and STACs should formulate advice to meet the needs of decision makers;
  - unnecessary duplications or conflicts between the advice of SAGE and STACs should be avoided. If duplications are significant, or there are differences in the advice being provided at local, Devolved Administration and the UK level this should be managed;
  - STAC(s) and SAGE should regularly communicate with each other to share information and knowledge to ensure that there is a commonly recognised understanding of the scientific and technical advice (see part four on coordinating the S&T sitrep). The coordination of communication between SAGE, and STACs and in particular multiple STACs are integral to the response, particularly in facilitating an understanding of any differences that may intentionally being advised between geographical areas. For example, during the 2009 H1N1 pandemic, geographical hotspots of the influenza were advised to adopt a different response approach from that of the overall UK position.

- Despite the close working and information sharing between SAGE and STACs, in certain emergencies, STACs remain accountable to SCGs and SAGE remains accountable to COBR. A STAC does not in any circumstance become a sub-committee of SAGE, but remains accountable to the SCG and focused on the advice requirements at the local level.

## Assurance

79. The working assumption will be that STACs and the advice providers contributing to them will quality assure the advice that they provide, as far as it is practical. In collating S&T situation reports (see part four), the SAGE secretariat will informally seek assurances that the advice has been scrutinised and that known uncertainties are highlighted and explained.

## Defining SAGE, STAC interactions

80. SAGE, STAC(s) interaction arrangements (see below) should be defined by the LGD (if existent) in consultation with Cabinet Office and the Government Office for Science. In doing this the following issues should be considered.
- **Resources** - Providers of advice may receive requests for advice from a number of advisory groups operating at different levels (e.g. local, departmental, Devolved Administration and from COBR). In these instances, some or all advice providers will experience difficulties in meeting these competing demands, resulting in the “most appropriate experts” being unable to attend all groups on which they are required. This would lead to a dilution in the quality of advice provided and/or a reduction in the range of specialism’s represented on each group. Where resources are stretched there may be a need to marshal resources or pool them between multiple SCGs/RCGs.

**It is the responsibility of government agencies and advice providers to raise resourcing concerns that relate to the staffing of SAGE.** These concerns should be raised to the relevant Devolved Administration, department, the sub-national tier in England, the Government Office for Science and Cabinet Office, as appropriate.

- **Timeliness** – During emergencies there will usually be a demand for scientific and technical advice within a short timeframe. It can be difficult to meet these scientific and technical advice demands because of: overly complex and confusing

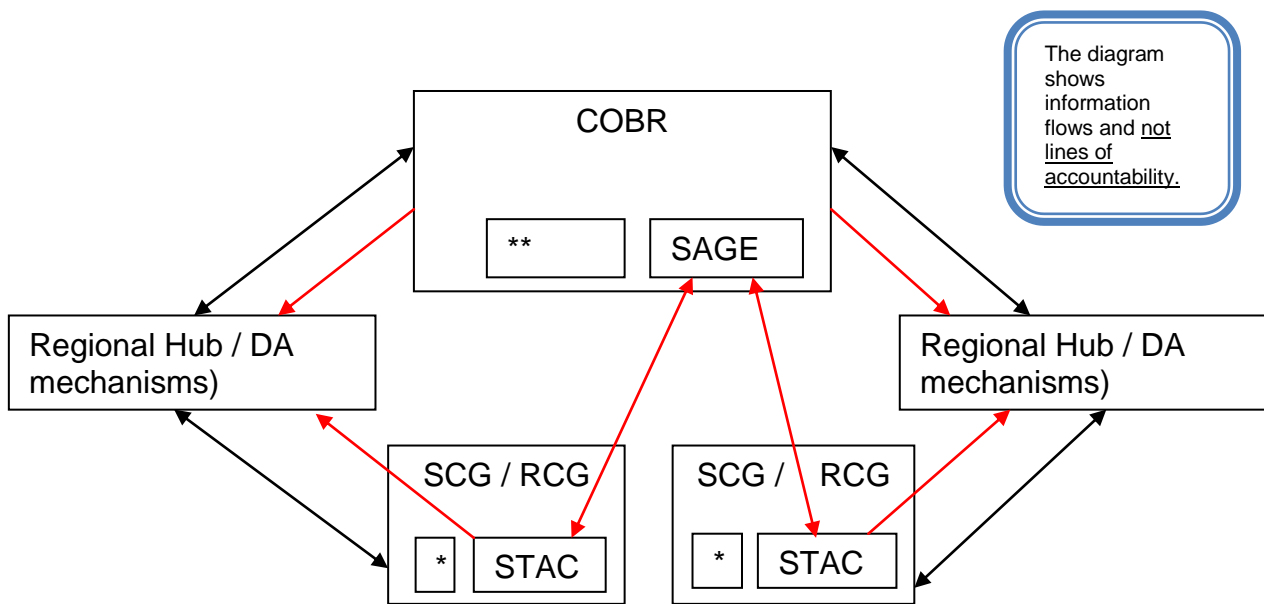
information flows; challenges in bringing together eminent scientists as well as practical issues. The timeliness of advice provision is particularly critical at the local level where delays in operational advice can affect the ability to save lives.

81. Once agreed SAGE, STAC interaction arrangements should be clearly communicated as appropriate, via the usual COBR information flow mechanisms.

### Default interaction model

82. The **default interaction model** outlined in **figure 4** will normally be the most appropriate SAGE / STAC interaction model as this embeds scientific advice provision into both local and UK cross-government decision making.

**Figure 4: Default SAGE, STAC interaction model**



Key:

\*A STAC is one source of possible advice for SCGs / RCGs

\*\*COBR is made up of multiple elements, SAGE is one of these.

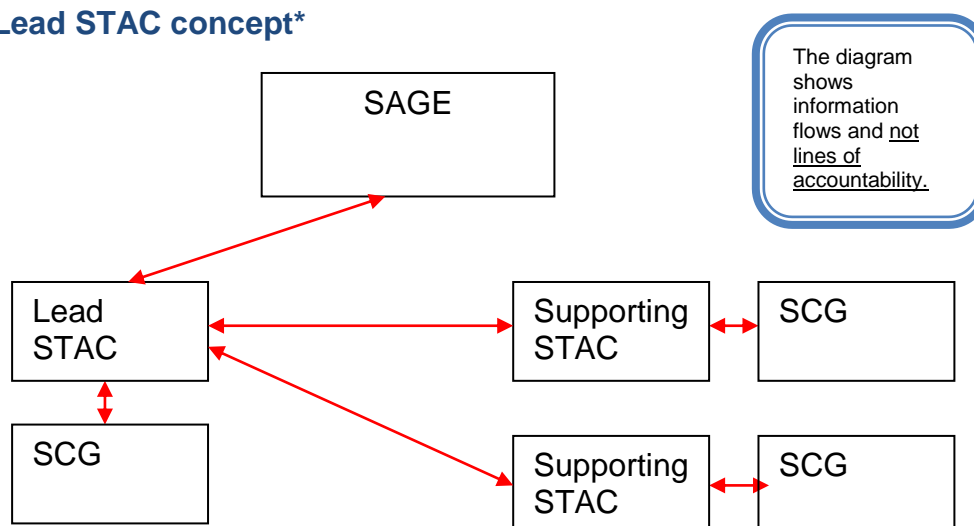
↔ Generic **information flows**

↔ Specific Scientific and/or technical **information flows**

## Pragmatic arrangement for overcoming interaction issues

83. There will be occasions when the default interaction model will not be practical, for the reasons outlined above at paragraph 80. Where practicalities mean that the default model (**figure 4**) is not fit for purpose a number of alternative models should be considered (see **figures 5, 6** and **7**). These models are not intended to be exhaustive and they should be adapted to suit circumstances.
84. **Figure 5** illustrates how scientific resources can be marshalled by a designated **Lead STAC**. A lead STAC can be designated for a distinct geographical area or a particular type of advice. If more than one lead STAC is designated, it is essential that their roles do not overlap and are clearly demarcated.

**Figure 5 Lead STAC concept\***

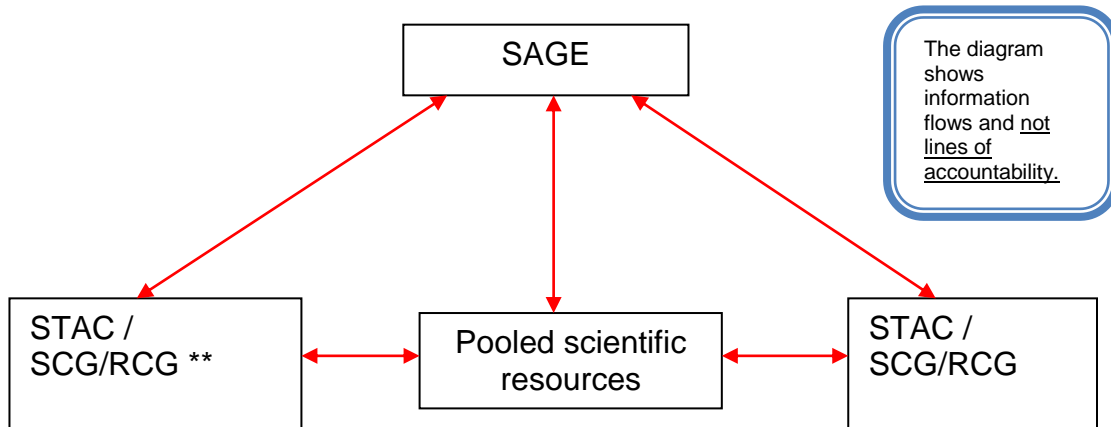


*\*For ease of illustration only the scientific and technical advisory groups and information flows are shown in this figure. Generic groups and information flows as shown in figure 3 would exist in parallel.*

85. The lead STAC(s) concept is very similar to that of Lead Responders and Lead Government Departments. A **Lead STAC** would be responsible for:
- coordinating advice for their SCG/RCG;
  - acting as lead for the provision and coordination of advice within their designated geographical or thematic area by marshalling resources;

- working with and maintaining good two-way communication links with supporting STAC(s); and
  - maintaining two-way communication with SAGE.
86. The Lead STAC would not have a role to coordinate advice as SAGE would be responsible for this (see part 2 above). **Supporting STAC(s)** would be responsible for:
- coordinating advice for their respective SCGs/RCGs; and
  - working closely with and supporting the lead STAC.
87. In some circumstances, marshalling resources will not be sufficient to overcome resourcing pressures. For instance, the number of STAC(s) required and limits on the number of specialists experts available, may still put unmanageable resource pressures on some or all advice providers, even if resources are marshalled. In these circumstances it may be necessary to pool some scientific and technical resources between a number of SCGs/RCGs (see **figure 6**).
88. When sharing resources between SCGs/RCGs:
- Resources should only be pooled as required and local experts should not unnecessarily be taken away from SCGs/RCGs. Local experts would remain embedded within SCGs/RCGs or STACs as determined by SCGs/RCGs. Any operational STACs would be a light-touch version of normal STAC (i.e. they would not involve the full-range of experts, as some would be pooled).
  - pooling arrangements should use existing structures where they exist; and
  - overly complex pooling arrangements (i.e. via multiple channels or in multiple locations) should be avoided to avoid confusing information flows.

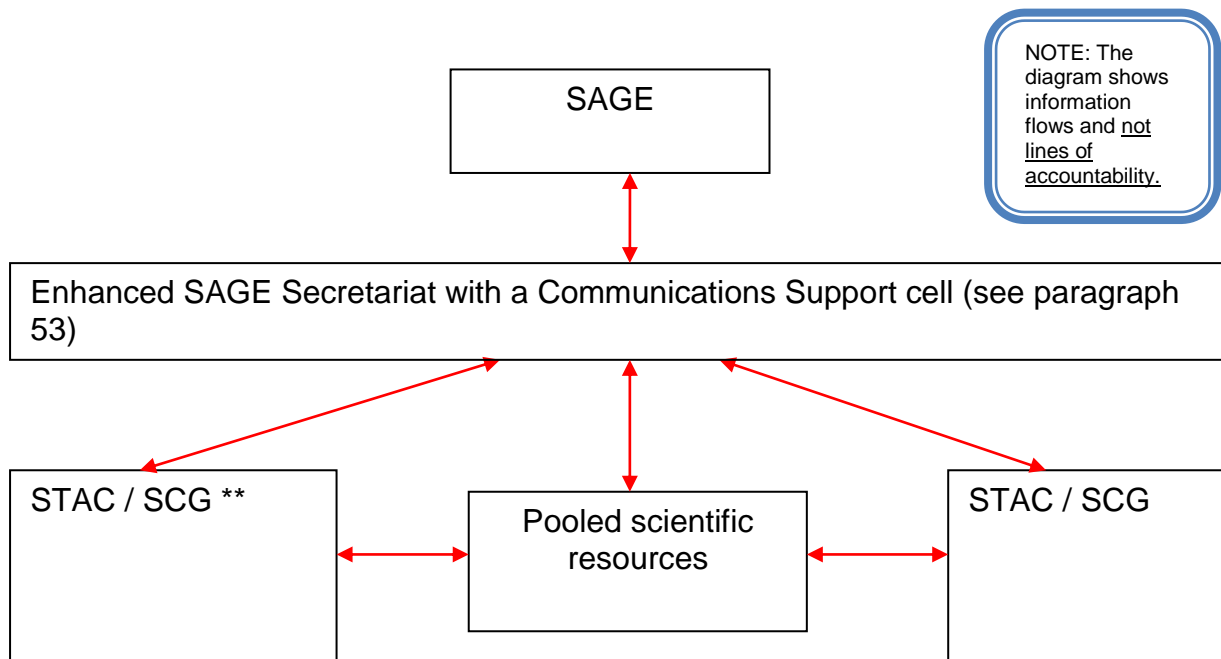
**Figure 6: Pooling and marshalling scientific resources between SCGs/RCGs\***



\*For ease of illustration only the scientific and technical advisory groups are shown in this figure. Generic groups and information flows as shown in figure 4 would exist in parallel.

89. For particularly large or complex emergencies additional support to channel two-way communications between SAGE, pooled resources and SCGs may be required to reduce the burden on the SAGE secretariat. This can be fulfilled by an enhanced SAGE secretariat which would include a communications, support cell function (see **figure 7**).

**Figure 7: Pooling and marshalling scientific resources between SCGs\***



\*For ease of illustration only the scientific and technical advisory groups are shown in this figure. Generic groups and information flows as shown in figure 4 would exist in parallel.



90. For this approach to be effective, good two-way communication is required between SAGE or the STAC providing the advice and both SCGs, the Devolved Administrations, government departments and COBR. Where a large number of SCGs require advice, the sub-national tier in England, LGDs and/or Devolved Administrations may need to facilitate this communication.
91. In addition to the default and alternative interaction models shown above, the option of only having a SAGE and no STACs should be considered, even when the criteria for needing both are met.<sup>21</sup> In these scenarios SAGE would be responsible for providing advice to support both UK cross-government and local decisions. This is only likely to be practical if the need for scientific and/or technical advice to support local decisions is marginal.
92. Asking an advisory group to serve more than one master (e.g. COBR and SCGs) could create operational, though not unsurpassable challenges. For practical reasons it may make sense to separate the tasks of advising COBR and advising SCGs by creating sub-groups.
93. None of these options are designed to be rigid and they should be adapted and modified to best suit the circumstances.

### **Multiple STAC interaction**

94. Where there are multiple STACs in operation during an incident it is sensible for STACs to communicate with each other, regardless of whether SAGE is active or not. For instance, sharing data, knowledge and/or advice will help minimise duplication across multiple advisory groups and reduce the potential for conflicting advice arising across multiple response areas. STAC chairs should agree communication and liaison arrangements, as appropriate to the circumstances, liaising with SAGE (if activated) to ensure the advice provided at all levels is coordinated, consistent and meets both local and where required Devolved Administration and UK-wide needs.

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<sup>21</sup> If these criteria do not apply both SAGE and STAC(s) are not needed.

## **Part Six: The Interaction between SAGE and Devolved Administration advice groups**

95. Each of the Devolved Administrations (DAs) has its own crisis management arrangements<sup>22</sup> which include mechanisms for coordinating scientific and technical advice (see below for details on each nation). These arrangements are consistent with UK-wide arrangements.

### **The interaction between Devolved Administration advice groups and SAGE (if active)**

96. Many level 2 and 3 emergencies will involve a mixture of excepted, reserved and transferred issues. For excepted and most reserved matters the UK Government's Lead Government Department will lead the response in respect to these matters, working closely with any Devolved Administrations that are affected. For transferred matters the respective nations affected by the emergency will work together to respond to transferred aspects.
97. Where SAGE is active, the Devolved Administrations may also decide to set up their own scientific groups to inform strategic decisions within their area and statutory competence. Where this is the case the DA groups will be invited onto SAGE - should such representation not be feasible, liaison arrangements will be put in place to ensure there is close engagement between the two. The mechanisms for coordinating scientific and technical advice in the Devolved Administrations are set out below.
98. Where both Devolved Administration advice groups and SAGE exist in parallel, SAGE will focus on providing advice to support UK cross-government decision making, whilst Devolved Administration advisory groups will focus on supporting decision making by Ministers in the Devolved Administrations on transferred matters.

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<sup>22</sup> These arrangements are outlined in CONOPs, ERR and their own respective contingency plans. Northern Ireland: <http://www.ofmdfmi.gov.uk/index/making-government-work/civil-contingencies.htm>

## **Requesting assistance and dealing with these requests**

99. If COBR is active, the Devolved Administrations can request assistance for securing or sourcing scientific and technical advice to help inform decision-making in the Devolved Administrations on issues within their statutory competence, via COBR. Where SAGE is active, COBR will commission SAGE to provide assistance. Where SAGE is not already active, requests may trigger SAGE activation (if the criteria in paragraph 36 are met) or the requests may be dealt with by the Government Office for Science, the Cabinet Office or Whitehall Lead Government Department as appropriate.
100. Where COBR is inactive, the Devolved Administrations can request assistance for sourcing and securing scientific and technical advice via the Cabinet Office, the Government Office for Science, Whitehall Lead Government Departments or territorial departments, as appropriate. If the situation is deemed to be a level 2 or 3 emergency, these requests could trigger COBR and SAGE activation. If the situation is not deemed to be a level 2 or 3 emergency these requests may be dealt with without the need to activate COBR.
101. Assistance may include: information on how to source scientific and technical advice; support for securing advice and/or assistance in assessing advice.

## **Scientific coordination arrangements in Scotland**

102. In Scotland, SCGs have STAC arrangements in place, for use if required. These will normally include representatives from, or have direct links with, relevant local organisations and Devolved Administration bodies at both Scottish and UK levels, including for example SEPA, Health Protection Scotland and the Food Standards Agency.
103. In the event that an SCG or STAC requires additional support in securing authoritative advice, for example where expertise may be difficult to secure or where there are conflicts in the advice that is available, SCG(s) would normally approach the Scottish Government for assistance. The Scottish Government would consult with its own professional advisers (the offices of the CSA, CMO and CVO) and networks as

required. If wider advice or agreement needed to be secured Scottish Government would liaise with the UK Government, via the Cabinet Office which will liaise with the Government Office for Science, and through normal department contacts.

104. In circumstances where multiple STACs in Scotland are required, Scottish Government will liaise with active SCGs/STACs, to ensure that robust information co-ordination arrangements are in place. Subject to circumstances this could involve identifying a Lead STAC (see paragraph 86 to 89) or establishing a Scottish-level scientific or technical advisory group within the Scottish Government Resilience Room (SGoRR). The Scottish Government would where necessary request, via the Cabinet Office, the activation of and/or the support of SAGE.

### **Scientific coordination arrangements in Wales**

105. In Wales, Strategic Co-ordinating Groups (SCGs) also have STAC arrangements. Where scientific and technical advice is required by more than one SCG in Wales, a **single STAC** working under the direction of the SCG or SCGs, may be established to provide scientific and technical advice to a number of SCGs.
106. The STAC will advise and respond to questions raised by the SCG or any of its sub groups and will support the SCG in establishing its strategic objectives. During the recovery phase the SCG Recovery Co-ordinating Group may activate a STAC to seek advice, whether or not it has already been established by the SCG during the response.
107. Where the requirement for scientific and technical advice is wider than the expertise available to the SCG, the Welsh Government may be asked to identify other sources of scientific advice from across Wales or further afield to support the local response. If necessary, the Welsh Government will consult with their own professional advisers (e.g. CSA, CMO, CVO) and/or seek support from the UK Government via Cabinet Office, which will liaise with the Government Office for Science, in identifying appropriate expertise.

108. If necessary, the Welsh Government may also ask COBR to activate and co-ordinate SAGE in order that UK scientific and technical advice is available to the Welsh Government and, through that process, is also available to inform the Strategic Co-ordinating Groups.

### **Scientific coordination arrangements in Northern Ireland**

109. Given the relatively small size of Northern Ireland, the number of internal sources of scientific and technical advice will be limited, particularly in emergencies which have unusual or rare causes or impacts. The limited number of experts available in Northern Ireland also restricts the opportunity for multiple layers of scientific advice.

110. The Northern Ireland Central Crisis Management Arrangements (NICCMA) would be activated for a Level 2 or 3 emergency. Under NICCMA there is a facility to convene a scientific and technical advisory group to provide specialist analysis and advice when required. The remit of this group would be to give professional advice to the strategic co-ordination and decision making group within NICCMA in order to facilitate informed decision making. The group would be made up of professional and technical experts relevant to the particular emergency scenario. Initially, these would be experts from within the public sector but they would be augmented with experts from other sources in Northern Ireland as appropriate. If wider advice or agreement needed to be secured the Northern Ireland Executive would liaise with the UK Government, via the Cabinet Office which would liaise with other government departments as necessary.

111. In addition to formal liaison through the Cabinet Office, the members of the NI scientific and technical advisory group would liaise with experts in England, Wales, Scotland and Ireland in relation to common aspects of an emergency affecting more than one country or to obtain additional advice. Where a SAGE group is operating as part of the COBR machinery, the scientific and technical advisory group in Northern Ireland would interact with SAGE as set out in paragraphs 100 to 102.

112. For Level 1 emergencies NICCMA is not normally convened. In these circumstances the Northern Ireland Lead Department would source and co-ordinate appropriate scientific and technical advice making use of:

- its own expertise and that of its agencies and Non-Departmental Public Bodies;
- existing Northern Ireland departmental scientific and technical advisory groups;
- experts within Northern Ireland, for example in academic institutions and industry;
- experts from outside Northern Ireland, through the appropriate government department(s) in England, Scotland, Wales and Ireland.

113. In addition to the arrangements above, in very localised emergencies in Northern Ireland, or where the direct response to a more widespread emergency has particular local aspects, the lead emergency service or government agency may establish its own sources of scientific and technical advice to provide guidance for the operational response.

## Part seven: Dealing with requests for assistance and concerns

### Reasons for requests for assistance and concerns

114. There are a number of potential reasons for SCGs or others to seek assistance in either securing or coordinating the necessary advice during an emergency. These can include:
- difficulties in identifying and/or securing the “best available” and “appropriate” advice / expertise, particularly for highly complex or widespread events;
  - difficulties in accessing information, particularly where it is sensitive or may be restricted;
  - Potential disagreements between advice providers and/or concerns with the particular advice available; and
  - not having the resources to coordinate scientific and/or technical advice, for instance when resources are stretched to deal with the consequences of a major and/or fast moving event and additional capacity may be needed to coordinate scientific advice and/or other relevant advice.

### Principles for dealing with requests and concerns

115. Drawing on the subsidiarity principle (see **annex B**), advice, support and assistance (whether requested or required) should be found at the lowest possible level and be as light-touch as possible. Assistance requests and concerns should be escalated and de-escalated as necessary (see below). Guidance on dealing with requests for assistance from the DAs is covered in part 5 paragraphs 100 to 102.

### Principles for asking for assistance or raising concerns

116. Given the above, the most appropriate first point of call for SCGs seeking assistance or raising concerns would be their regional hub (if in England) or the appropriate Devolved Administration or LGD. COBR (if active) and Cabinet Office and/or the Government Office for Science would be the next port of call.

### **Options for providing assistance in situations where COBR is active**

117. There are separate options for dealing with calls for assistance relating to the coordination of scientific advice. These are:

- commissioning SAGE (if active) to provide support;
- activating SAGE and commissioning it to provide support (see part three for the criteria for SAGE activation);
- providing advice, assistance or support, outside of the COBR mechanism (see below); or
- de-escalating the request or requirement if it is deemed unnecessary.

### **Options for proving assistance in situations where COBR is not active**

118. Similar options exist in circumstances where COBR is not already active. These are:

- The sub-national tier in England, LGD, Devolved Administration or the Cabinet Office and the Government Office for Science provide advice, assistance or support, outside of the COBR mechanism (see below)); or
- de-escalating the request or requirement if it is deemed unnecessary.

### **Providing support and assistance outside of the COBR mechanism**

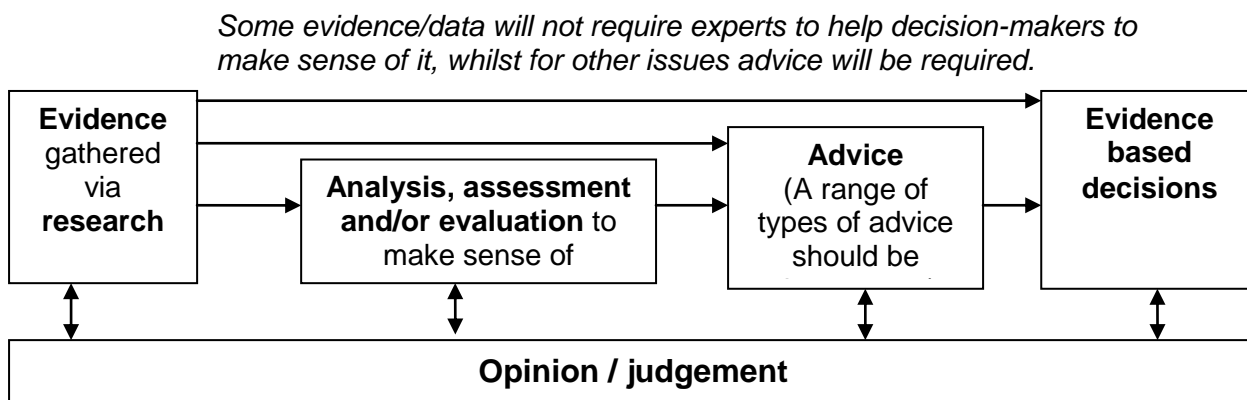
119. Assistance and support for the coordination and provision of scientific and technical advice outside of the COBR mechanism could include facilitating bilateral arrangements, mutual assistance and/or using existing mechanisms. Whichever approach is adopted the principles for SAGE outlined in this guidance should be followed as it is possible that informal arrangements could become SAGE.



## Annex A: Underpinning definitions

Definitions for each of the key stages in evidence-based decision making process are provided below.

### The evidence based decision making process



### Evidence

Evidence in its broadest sense includes anything that is helpful for forming a conclusion or judgement. For it to be helpful, it needs to be observable or measurable. It can include economic measures or indicators, legal documents, technological information and numerical data.

### Research

Research in its broadest sense refers to the process of gathering evidence. Evidence can be acquired via new research and/or by reviewing, evaluating, correcting and integrating previous knowledge from existing research.

### Analysis, Assessment and Evaluation

Analysis, assessment and evaluation are processes for making sense of the evidence gathered.

### Opinion, judgement and uncertainty

Analysis, assessment, evaluation and research all aim to be as objective as possible. However, expert opinion shapes the design of these processes. Experts formulate ideas and plausible explanations for phenomena to develop research questions. These questions will inform the research processes and analysis, assessment and evaluation techniques used.

Research, analysis, assessment and evaluation are rarely able to provide definitive answers because of the unknown affect of known and unknown variables (or factors). This knowledge gap invariably means that expert judgment is required to interpret results. In doing this experts will make a statement on the extent and sources of uncertainty. It will not always be possible for experts to reach a consensus in opinion, especially when issues are complex, the available data or evidence is limited and/or there are significant gaps in existing knowledge.

## **Advice**

In providing advice, experts or advisory groups aim to help those that they are advising to make sense of the available evidence. They may do this by using research, analysis, assessments, evaluations and their expert judgement or a combination of these.

Enabling decision makers to make sense of complex evidence is critical for ensuring that decisions are informed rather than dictated by evidence. Where there are differences in expert opinion, these should be highlighted and explained to ensure decision makers are given well-rounded, balanced advice.

## **Scientific and technical advice**

This guidance uses the term scientific and technical advice to refer to a wide spectrum of advice on a range of scientific and technical topics. Scientific and technical advice encompasses a wide-range of disciplines including the natural sciences (e.g. chemistry, physics and biology), mathematics and statistics, operational research, clinical specialities and the social sciences (such as psychology, geography and sociology).

Scientific and technical advice will draw on a range of research, analysis, assessment and evaluation techniques, including scientific, social and operational research and both quantitative (numeric, e.g. statistics) and qualitative (non-numeric) analysis techniques.

## **Decision making**

In crisis management decisions are made at a number of different levels (e.g. international, UK cross-government; departmental, Devolved Administration and local). Additionally, decisions are made at national strategic, local strategic, tactical and operational levels of the response. At each level there is a need to ensure that decisions are evidence based, and also to consider decisions made and constraints

that apply at other levels. For further details of the levels of command, control and co-ordination that apply at national and local levels please refer to CONOPS<sup>23</sup> and ERR<sup>24</sup>.

Decision makers will make decisions on the basis of their assessment of the range of advice and evidence presented to them, combined with their own experience and judgement. It is good practice that no single strand of advice or evidence will, on its own, be the sole basis for a decision. Where decisions are collective, as is typical at the strategic level in crisis management, decision-makers should also consider and factor in the judgements and opinions of other participants and stakeholders.

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<sup>23</sup> [http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi\\_scan\\_F8D0BFE83951C3DA=0&bcsi\\_scan\\_filename=conops-2010.pdf](http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf?bcsi_scan_F8D0BFE83951C3DA=0&bcsi_scan_filename=conops-2010.pdf)

<sup>24</sup> <http://www.cabinetoffice.gov.uk/media/353478/err-guidance-050410.pdf>

## **Annex B: Overarching principles**

Guiding principles for ensuring effective emergency management are outlined in CONOPS and ERR. These can be applied to all aspects of emergency management, including the coordination and provision of scientific and technical advice to support all levels and types of decision making. The role of scientific and technical advice at each stage of emergency management and the key principles for all stages of this process are summarised below.

### **The Emergency management approach**

In the UK a robust, proportionate, flexible approach to emergency management is achieved by:

- identifying and assessing the risks we face in the medium term (the next five years);
- using this assessment to identify generic capabilities requirements; and
- identify high impact risks, such as pandemic flu that require some specific planning; and
- maintaining readiness by anticipating and assessing emerging risks that could occur over the next 6-12 months, exercising response plan arrangements, training key staff; and
- continuously reviewing and revising arrangements to reflect lessons learnt and good practice.

### **Anticipation**

Identifying risks, assessing their likelihood and impacts (both direct and indirect) is important for maintaining UK readiness. At the UK level the Cabinet Office coordinates both medium and short term (5 years and 6-12 months) assessments. It works closely with the Government Office for Science to ensure that expert advice is drawn upon to identify new risks and with government departments and agencies to ensure these assessments are informed by scientific and technical advice.

For each identified and agreed risk there is a designated Lead Government Department, who is responsible for ensuring that the risk assessment is informed by scientific and technical advice, drawing from both internal expertise and external bodies. The Cabinet Office provides the lead for newly identified or emerging risks that do not yet have a departmental lead.

The medium term UK coordinated risk assessment is used to prioritise risks, identify the generic capabilities (or National Resilience Planning Assumptions) needed to ensure UK resilience and those risks that require specific planning. This process underpins departmental and Devolved Administration preparations for emergencies (see below).

The National Risk Register, an unclassified version of the medium term UK coordinated risk assessment is published, along with Local Risk Assessment Guidance (LRAG), and the National Resilience Planning Assumptions to help inform local risk assessments and planning. Local responders have a duty to maintain local risk assessments and to coordinate a multi-agency assessment, or Community Risk Register (CRR).

## **Preparation**

At the UK level, a cross-government National Resilience Capability programme is coordinated by the Cabinet Office. This aims to meet generic capability requirements set out in the National Resilience Planning Assumption and coordinate specific planning for high impact risks, such as pandemic flu.

Lead Government Departments and the Devolved Administrations use their own Science Advisory Groups<sup>25</sup> (SAGs) to commission new research and draw on a range of experts to ensure their planning is informed by science. To help ensure readiness, planning arrangements are regularly tested via exercises and training.

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<sup>25</sup> These groups are not always called SAGs. In the context of this guidance the term SAG is used to refer to all departmental or national led scientific or technical advisory groups focused on or used to inform emergency management (preparations, response and recovery).

The Civil Contingencies Act (2004) requires local planners to prepare for emergencies and sets out a framework for proportionate risk based assessments and generic consequences based planning. Local plans and preparations should be informed by their risk assessments (see above) and scientific and technical advice, where appropriate.

At all levels (UK, departmental, Devolved Administrations and local), emergency preparations should include the consideration of:

- which scientific and technical disciplines can add value
- potential advice providers (see Annex E);
- information, surveillance and analysis strategies;
- whether any generic scientific and/or technical briefing can be prepared in advance;
- the most likely configuration of SAGE / SAC / STAC structures, e.g. which sub groups are likely to be required (see part four);
- how SAGE / SAC / STAC will be resourced and funded;
- security clearance levels and secure means of communication, if appropriate;
- the links between the various scientific and technical advisory groups;
- the preparatory work of others in regards to the coordination and provision of scientific and technical advice - interdependencies are likely and a collaborative approach may prove more efficient; and
- the need for arrangements to be flexible and scalable and resilient - over reliance on any individual expert should be avoided as they may not be available in the event of an emergency.

Together, these preparations for the provision and coordination of scientific and technical advice for foreseen emergencies will, given their flexibility, provide a useful starting point for unforeseen emergencies. During emergency pre-prepared

arrangements should be reviewed to keep pace with the evolving situation and deal with unforeseen developments.

### **Continuity**

As with other aspects of emergency management, the coordination and provision of scientific and technical advice is best provided by those organisations and agencies that perform a similar function as part of their normal duties. The existence of the Scientific Pandemic Influenza (SPI) group prior to the 2009 pandemic was beneficial as experts were already familiar with the issues, and with working with each other before the outset of the pandemic and SPI becoming SAGE. Scientific and technical planning groups will help provide continuity in the event of an emergency and help speed the process of coordinating advice.

### **Subsidiarity**

Decision-making during emergencies occurs at different levels (e.g. local, departmental, devolved and UK cross-Government). Decisions should be taken at the lowest possible level. In practice, the highest level at which decision making is required will be determined in part by the scale, spread, complexity and potentially the severity of an emergency.

Coordination however, should occur at the highest level appropriate and add value.

Value can be added by:

- ensuring the best available expertise is accessed;
- providing leadership;
- minimising duplication;
- identifying interdependencies;
- identifying gaps; and
- prioritisation.

Similarly, scientific and technical advice to support decision making should be provided at the lowest appropriate level, with coordination at the highest level necessary.

Therefore local experts will normally be used to provide scientific and technical advice to SCGs and responders and SCGs will be responsible for making arrangements to coordinate this advice, via a STAC if required. For some emergencies, the geographical scale, complexity and potentially the severity of the issues requiring scientific and technical advice and/or a limited number of experts will mean that departmental, Devolved Administrations or UK cross-government coordination of advice may be required.

### **Direction**

Clarity of purpose is essential for the coordination and provision of scientific and technical advice. Aims and objectives should be clearly communicated in the Terms of Reference (TOR) for any advisory group and these should be agreed by its members.

The TOR for any SAGE (or indeed STAC) should include an aim to support decision making during emergencies. For SAGE this would be to support UK cross-government strategic decision making and for STACs it would be to support local decision making. The Code of Practice for Scientific Advisory Committees<sup>26</sup> provides further guidance on this.

The chair of each advisory group should take responsibility for ensuring that the Code of Practice for Scientific Advisory Committees are adhered to and that aims and objectives are met, as far as is practicable.

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<sup>26</sup> <http://www.bis.gov.uk/assets/bispartners/goscience/docs/g/10-669-gcsa-guidelines-scientific-engineering-advice-policy-making.pdf>



## **Coordination**

For many emergencies the coordination of advice from multiple advice providers and advisory groups will be required. Effective coordination relies upon, cooperation, integration and effective communication (see below).

## **Cooperation**

Cooperation between providers and advisory groups or positive engagement based on mutual trust and understanding is essential for ensuring transparency and consequently consistency, within and between groups.

## **Integration**

Scientific and technical advisory groups should ensure that they avoid:

- having overlapping aims to other advisory groups operating in parallel - this can cause confusion and unnecessary duplication; and
- overly complex information flows and layers of reporting - this can create delays and confusion.

## **Communication**

Information flows between scientific advisory groups and policy makers at all levels should be both clearly defined and followed. Some potential tools that can help ensure effective communication within and between groups can be found at part four.

## Annex C: Consultation approach

This draft guidance has been developed in consultation with the amplified science steering group. The membership of this group is listed below:

- Cabinet Office;
- Government Office for Science;
- Department for Business Innovation and Skills;
- Department of Health;
- Department for the Environment, Food and Rural Affairs;
- Department for Energy and Climate Change;
- Home Office;
- Ministry of Defence;
- The Scottish Executive;
- Welsh Government;
- Northern Ireland Executive;
- Health Protection Agency; and
- Met Office.

In addition the following consultation approaches were used:

- Workshops with the Steering Group members and:
  - the Environment Agency;
  - the Defence Science and Technology Laboratory (Dstl);
  - AWE;
  - The Office for Nuclear Regulation (ONR); and
  - The Radioactive Incident Monitoring Network (RIMNET).

## Annex D: Levels of emergency

Most emergencies are managed locally without need for assistance from central government. Sometimes the extent, scale, duration, severity and potential complexity of an emergency mean that assistance and/or support is required. *“Responding to emergencies, the UK central government approach response, and concept of operations”* (CONOPS)<sup>27</sup> broadly categorises these emergencies requiring central government assistance into three types:

- **Level 1 or significant emergencies** which have a wider focus and require central government involvement or support primarily from a Lead Government Department – or a Devolved Administration, alongside the work of emergency responders.
- **Level 2 or serious emergencies** which has or threatens, a wide and/or prolonged impact requiring sustained central government coordination and support from a number of departments and agencies, usually including the regional tier within England and where appropriate, the Devolved Administrations.
- **Level 3 or catastrophic emergencies** which have exceptionally high and potentially widespread impacts that require immediate central government direction and support (e.g. a Chernobyl-scale emergency).

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<sup>27</sup> <http://interim.cabinetoffice.gov.uk/media/349120/conops-2010.pdf>

## Annex E: Advice providers

Type of advice	England	Wales	Scotland	Northern Ireland
<b>All</b>	The Government Chief Scientific Advisor and/or departmental Chief Scientific Advisors	The Government Chief Scientific Advisor and/or departmental Chief Scientific Advisors	The Government Chief Scientific Advisor and/or departmental Chief Scientific Advisors	Departmental Scientific Advisors
<b>Site Specific Information</b>	Site operators; Regulators	Site operators; Regulators	Site operators; Regulators	Site operators; Regulators
<b>Specialist Public Health Advice</b>	CMO – England: Public Health England <sup>28</sup> ; Department for Health	CMO – Wales; Public Health Wales	CMO – Scotland Health Protection Scotland;	CMO – Northern Ireland Department of Health, Social Services and Public Safety (DHSSPS);
<b>Direction of NHS Resources</b>	Department of Health	Welsh Government	Scottish Government	DHSSPS Minister
<b>Health and Safety of workers</b>	Employer; Health and Safety Executive; Health and Safety Laboratory	Employer; Health and Safety Executive; Health and Safety Laboratory	Employer; Health and Safety Executive; Health and Safety Laboratory	Employer; Health and Safety Executive, NI; Health and Safety Laboratory
<b>Health and Safety of Responders<sup>29</sup></b>	Employer	Employer	Employer	Employer
<b>Food Safety</b>	Food Standards Agency	Food Standards Agency	Food Standards Agency	Food Standards Agency
<b>Environmental Protection</b>	Environment Agency; Natural England	Environment Agency Wales <sup>30</sup>	Scottish Environmental Protection Agency	Northern Ireland Environment Agency
<b>Flooding</b>	Environment Agency	Environment Agency Wales	Scottish Environmental Protection Agency	Rivers Agency, Roads Service and NI Water

<sup>28</sup> On April 1st 2013, the Health Protection Agency will cease to exist and its functions will be subsumed into Public Health England. The NHS Commissioning Board will lead and direct the National Health Service in England.

<sup>29</sup> Responder health and safety rests with each employer. HSE would investigate instances where responders have been injured or killed.

<sup>30</sup> The EAW will no longer exist after 1<sup>st</sup> April 2013. It will be replaced by a single body comprising the EA, Countryside Council for Wales.

Type of advice	England	Wales	Scotland	Northern Ireland
<b>Public Water Supply</b>	Water Companies; Defra; Drinking Water Inspectorate	Water Companies; Welsh Government; Drinking Water Inspectorate	Scottish Water; Scottish Government	NI Water; Northern Ireland Environment Agency
<b>Meteorological Information</b>	Met Office; Air Quality Monitoring	Met Office; Air Quality Monitoring	Met Office; Air Quality Monitoring	Met Office; Air Quality Monitoring
<b>Animal health and Welfare</b>	Defra CVO – England and/or CVO UK	Welsh Government CVO – Wales and/or CVO UK	Scottish Government CVO – Scotland and/or CVO UK	Department of Agriculture and Rural Development CVO Northern Ireland
<b>Maritime emergencies</b>	Maritime and Coastguard Agency; Marine Management Organisation <sup>31</sup>	Maritime and Coastguard Agency; Marine Management Organisation	Maritime and Coastguard Agency; Marine Management Organisation	Maritime and Coastguard Agency;
<b>CBRN<sup>32</sup> (Hazardous release and CT)</b>	Radioactive Incident Monitoring Network; MOD- Nuclear Specialists; AWE; Defence Science and Technology Laboratory; Home Office Scientific Development Branch (HOSDB) <sup>33</sup> ; Office for Nuclear Regulation; Met Office; Public Health England; Environment Agency; DEFRA; FSA	Radioactive Incident Monitoring Network; MOD- Nuclear Specialists; AWE; Defence Science and Technology Laboratory; Home Office Scientific Development Branch; Met Office; Office for Nuclear Regulation; Public Health Wales	Radioactive Incident Monitoring Network; MOD- Nuclear Specialists; AWE; Defence Science and Technology Laboratory; Home Office Scientific Development Branch; Met Office; Office for Nuclear Regulation; Scottish Environment Protection Agency; Health Protection Scotland; FSA	Radioactive Incident Monitoring Network; MOD- Nuclear Specialists; AWE; Defence Science and Technology Laboratory; Home Office Scientific Development Branch; Office for Nuclear Regulation, Public Health Agency; Met Office, NI Environment Agency, the Food Standards Agency and the Public Health Agency
<b>Decontamination advice</b>	Government Decontamination Service	Government Decontamination Service	Government Decontamination Service	Government Decontamination Service

<sup>31</sup> Focuses on the implications and effects of maritime pollution

<sup>32</sup> There is a strong link between CBRN advice and Metrological information which can help estimate plume distribution, health and environmental impact monitoring and site specific advice.

<sup>33</sup> HOSDB will be renamed as the Home Office Centre for Applied Science and Technology (CAST) as of 1 April 2011

## **Annex F: ECOSA and its handover procedures<sup>34</sup>**

ECOSA (Emergency Co-ordination of Scientific Advice) has been created to fulfil the requirement for the provision of immediate, coordinated and effective scientific advice to the Police, Fire and Rescue Service, Ambulance Service and public health responders across the UK at a CBRNE terrorist incident. This scientific advice will be provided up until the time a STAC is formed (notionally after two hours), wherein it will then stand down and the STAC will take primacy.

Immediate, coordinated and effective scientific advice is required for the first responders at a CBRNE terrorist incident in order for them to successfully achieve their main aims of saving life and the management of the scene. Such scientific advice is essential in allowing them to tailor their response to the particular CBRN threat, e.g. the level of PPE to wear, what treatment to provide to the injured etc.

ECOSA will normally only remain active until either STACs or SAGE have activated. Where STACs activate first, ECOSA will handover to STACs. Where SAGE and STACs activate at the same time, ECOSA will simultaneously handover to both groups (see part 5 for details).

The benefits of this process are that the first responders will receive immediate, coordinated and effective scientific advice – this reduces the potential for conflicting advice being received by the separate responders through their own separate scientific contacts. Secondly, the process is less resource intensive for the scientific agencies in that they can provide the advice through a single point of contact. Thirdly, by making the process more refined, focused and coordinated, it provides far more clarity in what the emergency responders will potentially be facing at scene. Finally, by having this immediate and coordinated provision of scientific advice, it enables the STAC and SAGE (once set up) to start from a more advanced position than they might otherwise be.

The advice that ECOSA collates and provides during the initial stages of a suspect CT CBRN incident will be useful for informing both cross-government and local decisions (see below).

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<sup>34</sup> The protocols and arrangements for activation may be updated following operations and exercises testing the ECOSA mechanism.

### ***Cross-government decision making***

- Emerging data which will help determine if it is CT
- Emerging data on what CBRN materials and how they were released (accidentally or CT) are involved which will help inform considerations on potential impacts and countermeasure strategies

### ***Local decision making***

- Emerging data on what CBRN materials and how they were released (accidentally or CT) will help inform decisions about personal protective equipment (PPE) and inner cordon operations.
- However COBR and SAGE may not be needed in all incidents where ECOSA activates as outlined below.
- If the incident remains suspect CT or is confirmed as such, COBR will almost certainly be activated. Given the continued need to coordinate scientific advice from a number of sources, SAGE will almost certainly also be activated.
- If the incident turns out to be a hazmat incident, during the time that ECOSA is active, COBR and/or SAGE may not necessarily be activated. The activation of COBR depends upon whether cross-government decisions are required and whether the activation of SAGE for scientific and/or technical advice needs to be coordinated. This in turn depends upon the number of sites involved and the complexity, severity and location of the accident(s).

ECOSA will normally only stand until STAC(s) and/or SAGE are activated. During its existence, given the relevance of the advice it collates, ECOSA will produce and disseminate regular S&T SITREPs. Given the relevance of the information and the potential for emergencies to evolve, both local responders and Cabinet Office will be included in this distribution. If COBR activates before any STACs, ECOSA will send S&T SITREPs to COBR via the situation cell. This pre-handover information flow will help ensure that there is an effective handover.

## ECOSA STANDBY PROTOCOL <sup>35</sup>

Step	Time	Event	Action
1		Call from Government department, Devolved Administration or partner organisation requesting that ECOSA is put on standby.	On call organisation's representative rings around and invites reps from AWE, DSTL, HPA - ERD Clinical, ERD on-call, HPA - CRCE as necessary for information sharing telecon in eg approx 1 hr. Level of security required is identified by initiator
2	T0	Telecon established	Attendees access required level of secure communications e.g. Brent. At telecon, agree initial recommendations to responders if required.
3	T60min (max)	Initial Information sharing telecom concludes	Future activity level of group agreed and ECOSA remains in stand-by mode or ECOSA activated* or stood down.
4	As agreed	Regular update telecon with agreed attendees	Future activity level agreed and ECOSA remains in stand-by mode or ECOSA activated* or stood down.
5		Repeat step 4 as agreed at teleconference or formally close through ERD duty officer	

\*if ECOSA activated go to step 3 of activation protocol

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<sup>35</sup> The protocols and arrangements for activation may be updated following operations and exercises testing the ECOSA mechanism.



## ECOSA ACTIVATION PROTOCOL<sup>36</sup>

Step	Time*	Event	Action
1	Within 10 mins	Initial call to ERD on-call from Emergency services control room or other agreed pathway for triggering the ECOSA process.	ERD on-call Duty Officer gathers information: <ul style="list-style-type: none"> <li>• About the informant</li> <li>• About the incident</li> <li>• About any advice already given</li> </ul> Option at this stage to close. ERD on call officer provides immediate advice as necessary based on CBRN response guidelines
2	Within 30 mins	Activation of ECOSA telecon	ERD on-call officer calls ERD clinical advice, CRCE, AWE and Dstl on call numbers + additional ERD on call (support) officer: 'ECOSA telecon line opening immediately, please confirm you have dial in details'. ERD officer establishes telecon* as host. Telecon line remains open until STAC is established and content
3	Within 1 hour	Conduct telecon	Chair identified. All assess information and articulate advice. Other attendees invited if appropriate. ERD on-call plus support takes notes, fill in log and fill in S and T sitrep
4	10 mins maximum	Brief initial contact	ERD on-call leaves telecon to deliver initial scientific advice and identify future information requirements for ECOSA including contact details for STAC chair. After 10 minutes attendees reconvene in formal teleconference session
5		Repeat steps 3 and 4 until STAC activated	
6		Hand over to STAC	Fax or email ECOSA science & technical sitrep access details to STAC chair/ cabinet

<sup>36</sup> The protocols and arrangements for activation may be updated following operations and exercises testing the ECOSA mechanism.

			<p>office etc.</p> <p>Whole group remain available for Q&amp;A for 30 minutes after STAC convenes</p> <p>In that time agree mechanism for integrating ongoing access to expert scientific advice throughout course of incident into STAC.</p>
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\*if all invitees have airwave then the airwave talk group can be used as an alternative if required

***Handover procedure if STACs activate before SAGE (if it activates at all)***

The ECOSA handover process will commence once STACs are activated. If STACs are activated before SAGE, the STACs will need to inform SAGE on the key information collated by both itself and its precursor, ECOSA. During a handover of this type, considerations of how to deal with multiple requests for STACs should be considered (see above) prior to handover. ECOSA will need to handover to the local STAC(s) primary or super STAC as appropriate.

To ensure SCGs always have access to advice to inform local decision making, ECOSA will not stand down until the new arrangements for STAC, SAGE interaction are determined and are up and running. (A gap in advice provision at the SCG level could cost lives.)

In addition to the S&T SITREP a short handover period, where staff involved in the coordination of advice in ECOSA will provide briefing to the local STAC(s), regional, primary or DA STAC(s).

***Handover procedure if SAGE activates before or at the same time as STACs***

If COBR and SAGE are active the S&T SITREPs from ECOSA will be disseminated to SAGE and the COBR situation cell. HPA will provide continuity between ECOSA and SAGE. (In ECOSA, HPA coordinates the advice as they are the only advice provider that will be required to provide advice in all scenarios where ECOSA is needed. In a CBRN incident, HPA will always be needed to support cross-government decision making).

***Local handover:***

The same procedures as those used for the handover to STACs, when SAGE is not active will be used.

## Annex G: Guidance on producing a funding issues paper

An effective SAGE funding issues paper would ideally need to cover the following topics in the following suggested order:

- **Issue** - Briefly outline the issue highlighting what and how much funding is required and why it is critical to the emergency response or recovery. (if the paper covers the funding of more than one item or activity, a breakdown of costs by item/activity should be provided<sup>37</sup>);
- **Timing** - Highlight any timing issues, for instance the date that funding is required by and why it is required by this date and/or the implications of delaying.
- **Recommendation(s)** – Clearly outline what the paper is asking Ministers to do. This may be approving a particular recommendation(s) or considering a list of decision questions or options. Alongside each recommendation or decision point a brief supporting argument or the key pros and cons should be summarised.
- **Background** – A more detailed but concise discussion of:
  - the reasons why funding is required, highlighting the benefits of the activity / items requiring funding (i.e. the business case);
  - an outline of funding solutions investigated and their pros and cons - this may include timeliness considerations or a statement that funds are currently unavailable via these sources; and
  - a note of any funding that has been secured; and
  - if appropriate, further details on any timeliness issues.

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<sup>37</sup> Where this is an extensive list of items/activities is covered it would be more appropriate to put this breakdown of costs in an annex. This would prevent the key issues of the paper being lost in the detail of the breakdowns.

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