



Rialtas na hÉireann
Government of Ireland

NATIONAL PLAN FOR NUCLEAR AND RADIOLOGICAL EMERGENCY EXPOSURES

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SECTION : INTRODUCTION

1.1 Context

This **National Plan for Nuclear and Radiological Emergency Exposures** (“the **National Plan**”) sets out details of Ireland’s planning and preparedness for a national response to a nuclear or radiological emergency likely to cause widespread exposure across Ireland.

This National Plan replaces the **National Emergency Plan for Nuclear Accidents**¹ (“the **NEPNA**”), published by the Department of the Environment, Heritage and Local Government in December 2005.

The National Plan has been prepared in accordance with Regulation 55 of the **Radiological Protection Act 1991 (Ionising Radiation) Regulations 2019 (SI No. 30 of 2019)**², hereafter referred to as “the **IRR 2019**”. It takes into account key developments of recent years in the field of emergency preparedness and response, including but not limited to:

- The response to the Fukushima accident of 2011;
- Hazard Assessment studies which considered the risks to Ireland from nuclear installations in the UK. These are:
 - **Potential radiological impact on Ireland of postulated severe accidents at Sellafield**³
 - **Risks to Ireland from Incidents at the Sellafield Site**⁴
 - **Proposed nuclear power plants in the UK – potential radiological implications for Ireland**⁵
- The **Report of the International Atomic Energy Association (IAEA) Integrated Regulatory Review Service mission to Ireland**, conducted during 2015⁶;
- Legislative developments, including:
 - The **EU Council Directive 2013/59/EURATOM**⁷ (“the **Basic Safety Standards Directive**”)
 - The **EU Council Directive 2014/87/EURATOM**⁸ (“the **Nuclear Safety Directive**”);
- The **Strategic Emergency Management National Structures and Framework**⁹
- The **Framework for Major Emergency Management**¹⁰, and

¹ http://www.epa.ie/pubs/reports/other/corporate/rpii/RPII_Nuclear_Plan_Acc_05.pdf

² <http://www.irishstatutebook.ie/eli/2019/si/30/made/en/pdf>

³ https://www.epa.ie/pubs/reports/radiation/Potential_radiological_impact_Ireland.pdf

⁴ <https://www.dccae.gov.ie/en-ie/environment/publications/Documents/15/Risks%20to%20Ireland%20from%20Incidents%20at%20Sellafield.pdf>

⁵ http://www.epa.ie/pubs/reports/radiation/RPII_Proposed_Nuc_Power_Plants_UK_13.pdf

⁶ https://www.iaea.org/sites/default/files/documents/review-missions/irrs_ireland_mission_report_.pdf

⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0059&from=EN>

⁸ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0087&from=EN>

⁹ <https://www.emergencyplanning.ie/en/news/strategic-emergency-management>

¹⁰ <http://mem.ie/>

- Lessons learned by the National Emergency Co-ordination Group (NECG) when dealing with other emergencies.

1.2 Scope

Ireland's established policy is that, while not a nuclear energy producing country, we recognise the right of other States to determine their own energy mix. However, Ireland expects that where a State chooses to develop a nuclear power industry, this will be done in line with the highest international standards with respect to safety and environmental protection.

The National Plan recognises that based on the hazard analyses conducted, there exists a potential, albeit small, for emergency exposure situations to occur as the result of accidents or incidents. This plan sets out steps for a national response to an emergency exposure situation, and the subsequent transition to a managed existing exposure situation.

The central goal of this plan is to substantially reduce public exposure to any radioactive contamination which reaches Ireland as a result of a major nuclear or radiological incident abroad. It does this by setting out steps for the rapid implementation of protective measures in the hours and days immediately following the incident. These steps will substantially reduce public exposure to any radioactive contamination which reaches Ireland. This will in turn minimise the potential long-term health risks to the population.

This plan does not contain detailed guidelines for dealing with a nuclear or radiological exposure of a local nature. In such cases, prime responsibility for response rests with either the relevant local authority or with the licensed undertaking which is responsible for the source causing contamination, in accordance with emergency planning requirements under the **IRR 2019**. Under the Framework for Major Emergency Management, a draft [Protocol for Multi-Agency Response to Radiological Nuclear Emergencies](#)¹¹ provides further guidance.

Nor does this plan address responses to nuclear hostilities or malign radiological incidents. The Department of Justice and Equality is the designated Lead Government Department and An Garda Síochána is the lead Agency for responding to a malign CBRN incident in accordance with the **Protocol for Responding to a Malign CBRN (Chemical, Biological, Radiological and Nuclear) Incident**, adopted by the Government Task Force on Emergency Planning in 2011.

¹¹ <http://mem.ie/wp-content/uploads/2015/05/A-Protocol-for-Multi-Agency-Response-to-Radiological-Nuclear-Emergencies.pdf>

1.3 Defined Terms

The terms “emergency”, “exposure”, “emergency exposure situation” and “existing exposure situation” are defined in the **IRR 2019**:

- “emergency” means a non-routine situation or event involving a radiation source that necessitates prompt action to mitigate serious adverse consequences for human health and safety, quality of life, property or the environment, or a hazard that could give rise to such serious adverse consequences;
- “exposure” means the act of exposing or condition of being exposed to ionising radiation emitted outside the body (external exposure) or within the body (internal exposure);
- “emergency exposure situation” means a situation of exposure due to an emergency;
- “existing exposure situation” means an exposure situation that already exists when a decision on its control has to be taken and which does not call or no longer calls for urgent measures to be taken.

1.4 Associated documents

This plan refers to a number of other plans and documents, and may be read in conjunction with them. These include:

- [Guidelines for Co-ordinating a National Level Emergency/Crisis Response](#)¹².
- [Strategic Emergency Management – National Structures and Framework](#)¹³.
- [A Framework for Major Emergency Management](#)¹⁴.
- [A Protocol for Multi-Agency Response to Radiological/Nuclear Emergencies](#) (draft)¹⁵.

¹² <https://www.emergencyplanning.ie/system/files/media/file-uploads/2017-09/Guidelines%20for%20Coordinating%20a%20national%20Level%20Emergency%20Crisis%20Response%202016.pdf>

¹³ <https://www.emergencyplanning.ie/en/news/strategic-emergency-management>

¹⁴ <http://mem.ie/wp-content/uploads/2015/05/A-Framework-For-Major-Emergency-Management.pdf>

¹⁵ <http://mem.ie/wp-content/uploads/2015/05/A-Protocol-for-Multi-Agency-Response-to-Radiological-Nuclear-Emergencies.pdf>

SECTION 2: “ALL HAZARDS” SYSTEMS APPROACH & THE NECG

2.1 “All Hazards”

Ireland adopts an “All Hazards” System Approach for planning and preparedness for several types of emergencies, including nuclear and radiological emergency exposures.

This approach is illustrated by the figure opposite, and is described in more detail in both the **Strategic Emergency Management National Structures and Framework** and the **Framework for Major Emergency Management** documents.

Essentially, it comprises five stages:

1. Hazard Analysis.
2. Mitigation.
3. Planning & Preparedness.
4. Response.
5. Recovery.



This plan is set out in sections corresponding to those stages, beginning with Hazard Analysis (Section 3) and continuing to Recovery (Section 7).

Following the Recovery stage, stakeholders may review and amend this plan in light of lessons learned during the emergency, and the cyclical process may continue with a new Hazard Analysis for postulated future events.

2.2 The National Emergency Coordination Group (NECG)

The response to a national nuclear or radiological emergency exposure situation will require coordination between a number of government departments, agencies, and other bodies. This will be achieved by the activation of the National Emergency Coordination Group (NECG), to deliver a “Whole of Government” response to the emergency.

Actions of the NECG during the response to a nuclear emergency exposure will be

coordinated by the Department of Communications, Climate Action and Environment (DCCA), as Lead Government Department (LGD).

Lead responsibilities at a national level and details of the NECG structure and operations are contained in the document **Strategic Emergency Management (SEM) – National Structures and Framework** and associated guidelines adopted by the Government Task Force on Emergency Planning.

SECTION 3: HAZARD ANALYSIS

3.1 Introduction

Regulation 55(1)(b) of the **IRR 2019** states that the **National Plan for Nuclear and Radiological Emergency Exposures** “*shall be based on, and commensurate with, an assessment of potential emergency exposures that may arise from events taking place either inside or outside the State*”.

3.2 Events taking place inside the State

There are currently no high-level radiation sources in Ireland capable of causing a widespread emergency exposure situation across most or all of the country.

Custody, transport and use of the radiation sources held in Ireland are subject to license by the Environmental Protection Agency (EPA). Prime responsibility for response to an emergency situation involving a localised radiation source would rest with the relevant licensed undertaking or Local Authority, who are required to have their own Emergency Response Plans, under Regulations 57 and 58 of the **IRR 2019**.

It is acknowledged however that some such emergencies may require response actions at a national level. In such instances, the National Emergency Coordination Group (NECG) may be convened as set out in Section 6 of this plan.

3.3 Events taking place outside the State

The most immediate concern in an Irish context with regard to events taking place outside the State, with the potential to cause a widespread nuclear or radiological emergency exposure situation that requires a national response, is the possibility of such an event occurring in a nuclear installation in the UK.

As noted in Section 1.1 of this plan, extensive Hazard Analysis studies have been commissioned by Ireland to assess the risk of the occurrence and the likely effects of such an event. Two studies focus solely on Sellafield, while another covers proposed new-build nuclear power plants at eight locations in the UK. These eight locations include Wylfa Newydd (North Wales) and Hinkley Point C (Somerset), both relatively close to the east coast of Ireland.

A fourth study, [The Potential Economic Impact of a Nuclear Accident – An Irish Case](#)

[Study](#)¹⁶, was conducted by the ESRI and deals with the possible socio-economic costs to Ireland of a nuclear or radiological accident or incident abroad.

Hazard Analysis studies found that an event at a UK installation would not cause significant radiation exposure to people in Ireland, and would not result in immediate observable health effects.

The most appropriate action for even the most severe scenario considered would be simply to advise people to stay indoors as much as possible during the 24 to 48 hour period while the radioactive plume passed directly over Ireland. **There are no scenarios envisaged whereby evacuation from the east coast would be deemed necessary.**

Further details of the conclusions of these Hazard Analysis studies are presented in Appendix I.

For incidents at nuclear plants in countries other than the UK, the possibility of widespread significant exposure in Ireland is even more remote. However, temporary protective measures may still be required depending upon factors such as prevailing weather conditions (particularly wind direction) at the time of the incident.

3.4 Incidents near the Irish coast involving a nuclear-powered ship or submarine, or a vessel carrying nuclear material

Nuclear-powered marine vessels, and vessels carrying nuclear material, are expressly prohibited from entering an Irish harbour under [Section 52 of the Harbours Act 1996](#)¹⁷, unless granted special dispensation under that Act.

It is envisaged that in the remote likelihood of the occurrence of an event involving a nuclear-powered vessel, or a vessel carrying nuclear material, the event would be at such a remove from the Irish coastline that widespread protective actions would not be necessary. While a release to air may result in a need for short-term sheltering, contamination from a release to sea is unlikely to reach levels that would necessitate public protective actions. However, monitoring of seawater and seafood would be necessary to assess radiation doses to people and whether or not seafood would remain fit for consumption.

¹⁶ <https://www.esri.ie/system/files?file=media/file-uploads/2016-12/BKMNEXT313.pdf>

¹⁷ <http://www.irishstatutebook.ie/eli/1996/act/11/section/52/enacted/en/html#sec52>

SECTION 4: MITIGATION

4.1 Mitigation with respect to incidents abroad

Ireland is committed to working with international peers to enhance and improve radiation protection and nuclear safety worldwide, and maintains active membership of a number of international bodies such as EURATOM, the International Atomic Energy Agency (IAEA), the Nuclear Energy Agency (NEA) and the European Nuclear Safety Regulators Group (ENSREG).

Ireland is party to a number of international conventions relating to nuclear safety and radiation protection. These include:

- [The Convention on Early Notification of a Nuclear Accident](#)¹⁸
- [The Convention on Assistance in the case of a Nuclear Accident or Radiological Emergency](#)¹⁹
- [The Convention on Nuclear Safety](#)²⁰
- [The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management](#)²¹
- [The Convention on the Physical Protection of Nuclear Material including Nuclear Facilities](#)²²

Holding such memberships and being party to such conventions provides Ireland with a platform to contribute to the development of high international standards with regard to nuclear and radiological safety, and to ensure there is adherence to these standards.

4.2 Mitigation with respect to incidents in Ireland

Ireland operates a world-class regulatory and supervisory framework with regard to custody, transport and use of radiation sources under the Radiological Protection Acts 1991-2018. The EPA's radiation inspection activities are formally accredited to an ISO Standard which provides for openness and transparency in addition to continuous assessment and improvement. Inspectors from the EPA carry out routine inspections to assess compliance with legislative requirements and licence conditions. The National Crime Prevention Office undertakes security audits of facilities holding high activity radioactive sources in addition to facilities holding large numbers of radioactive sources. Mitigation processes are therefore in place from the outset of the use of any radiation source in Ireland.

¹⁸ <https://www.iaea.org/sites/default/files/infcirc335.pdf>

¹⁹ <https://www.iaea.org/sites/default/files/infcirc336.pdf>

²⁰ <https://www.iaea.org/publications/documents/infcircs/convention-nuclear-safety>

²¹ <https://www.iaea.org/sites/default/files/infcirc546.pdf>

²² <https://www.iaea.org/publications/documents/infcircs/convention-physical-protection-nuclear-material>

SECTION 5: PLANNING & PREPAREDNESS

5.1 Introduction

Planning and preparedness for a national response to a nuclear or radiological emergency exposure situation comprises several elements. These include the requirements set out in Regulation 55 of the **IRR 2019**.

Planning and preparedness is led by the Department of Communications, Climate Action and Environment (DCCAE), with the EPA acting as the primary competent authority.

5.2 Notification systems for nuclear or radiological events abroad

Formal notification of a nuclear or radiological emergency event abroad would be received in Ireland through either or both of the following:

- The [European Community Urgent Radiological Information Exchange](#)²³ (ECURIE) arrangements.
- The IAEA's EMERCON arrangements, operated by the [IAEA Incident and Emergency Centre](#)²⁴ (IEC).

The Irish National Contact Point (NCP) for both ECURIE and EMERCON is operated by An Garda Síochána, while the EPA is the national competent authority for both sets of arrangements. The EPA operates an on-call radiation duty officer system, whereby a senior staff member is on duty 24/7. On receipt of an alert notification, the NCP will immediately contact the EPA's radiation duty officer, who will in turn inform the LGD.

In the event of an incident occurring at nuclear installations in the UK, both the DCCAE and the EPA will also be informed by the UK's Department of Business, Energy and Industrial Strategy (BEIS), in line with the terms of a bilateral protocol agreement between the States. This is regardless of whether or not the incident has any radiological significance for Ireland.

Upon receipt of any notification, the EPA radiation duty officer may assist the LGD in making an initial assessment of the situation.

²³ <https://webgate.ec.europa.eu/ecurie/About.aspx>

²⁴ <https://www.iaea.org/about/organizational-structure/departments-of-nuclear-safety-and-security/incident-and-emergency-centre>

The DCCAE, as LGD, may then use this advice, and advice from others who may also be contacted, to consider whether the NECG should be convened to activate a national response in order to enact the measures set out in this plan.

5.3 Radiological monitoring in Ireland and internationally

As part of Ireland's emergency preparedness, the EPA operates a [national monitoring network](#)²⁵ for detection and measurement of ambient radiation levels, radioactive particles in the air, and deposition of contamination on the ground.

This is done with the assistance of Met Éireann, Local Authorities, and the Defence Forces.

The network consists of:

- Continuous gamma dose rate monitoring at 15 sites.
- Air sampling systems at 11 sites.
- Rainwater collection systems at 6 sites.

Internationally, the EPA provides radiological monitoring data to the [European Radiological Data Exchange Platform](#)²⁶ (EURDEP). Ireland's monitoring data is sent to EURDEP every hour. Most European countries provide this data in nearly real-time. EURDEP data will be available to the EPA during an emergency response.

In addition, the EPA has access to data from [RIMNET](#)²⁷, the UK's network of radiation monitoring stations. Ireland and the UK share the data from their national gamma dose rate monitoring stations, with data automatically exchanged on an hourly basis.

5.4 Reference levels for public exposure and emergency occupational exposure

The EPA has set reference levels for public exposure and emergency occupational exposure in the event of nuclear or radiological emergencies. These will be used to support the decision-making process regarding which protective actions to implement. These reference levels are set out in Appendix II.

²⁵ As detailed at <http://www.epa.ie/radiation/monassess/mapmon/>, with live data online from several stations.

²⁶ <https://remon.jrc.ec.europa.eu/About/Rad-Data-Exchange>

²⁷ <https://www.gov.uk/government/publications/rimnet-frequently-asked-questions>

Similarly, the EPA has also set Operational Intervention Levels (OILs) derived from the generic criteria which are used for taking decisions on protective actions and other response actions in the early phase of a nuclear or radiological exposure emergency. If an OIL is exceeded or expected to be exceeded, then the associated protective action should be implemented. Protective actions may also be implemented at lower levels.

These OILs are also set out in Appendix II.

5.5 Arrangements for co-ordinating the response to an emergency exposure situation

Arrangements for a national response to a nuclear or radiological emergency exposure situation are integrated into the “All Hazards” emergency management systems that exist at local and national levels. At a national level, the Minister with responsibility for Defence chairs the Government Task Force (GTF) on Emergency Planning, which oversees and ensures the fullest level of coordination and cooperation regarding national and strategic emergency management. In the event of an emergency at a national level or threats posed by an emerging emergency situation, the **Strategic Emergency Management (SEM) National Structures and Framework**, approved by Government in July 2017, outlines the Lead Government Department principle and how this is applied across a "whole of Government" approach to managing such responses. In the case of this National Plan, such responses are led by the DCCAE, as the Lead Government Department, convening the National Emergency Coordination Group (NECG).

The GTF meets regularly (approximately every six to eight weeks) to discuss and develop emergency planning issues at a national level, establish guidelines and protocols, share experiences from emergency exercises and real events, and develop the modalities of responses to national level emergencies. This affords both the DCCAE and the EPA regular opportunity to liaise with other bodies who would also be involved in the NECG should convening it become necessary in the event of a widespread nuclear or radiological emergency exposure situation.

In addition, the DCCAE and the EPA stage exercises to test this plan and to familiarise other departments and agencies with its provisions. This includes participation in international exercises such as those organised by the IAEA (ConvEx series), OECD Nuclear Energy Agency (INEX series), and the European Union.

5.6 Arrangements for international liaison and co-operation

With regard to preparedness for prompt co-ordination with other Member States and Third Countries which may be involved (or are likely to be affected by) a nuclear or radiological emergency exposure situation, Ireland is a contracting party to the International Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

This convention allows Ireland to request international assistance to support its response to a nuclear or radiological emergency exposure, regardless of whether or not the emergency originated within the State.

In the event of a natural, technological, or environmental disaster within the European Union, the European Community Mechanism for Civil Protection allows Member States to request assistance from other Member States where domestic emergency services need support in coping with the particular disaster.

The EPA is the designated competent authority for making and receiving requests for assistance, and for offering assistance to others, pursuant to the Convention on Assistance. Such requests or offers of assistance shall be subject to the approval of the Minister for Communications, Climate Action and Environment, as set out in [Section 27\(2\) of the Radiological Protection Act \(1991\)](#)²⁸.

5.7 Information for the general public

General information regarding nuclear power, radioactivity, and emergency planning will be available to the public on the website www.nuclear.ie at all times.

In the event of an emergency exposure situation occurring, additional information will be provided there, according to the specifics of the situation. These updates will include details of the cause of the emergency, how long the emergency exposure is expected to last, and any protective measures that may be required. This information will also be disseminated through the broadcast media and social media.

²⁸ <http://www.irishstatutebook.ie/eli/1991/act/9/section/27/enacted/en/html>

SECTION 6: RESPONSE

6.1 Triggers for invoking a national response

As set out in Section 5.2 above, the DCCAE, as the LGD, shall be responsible for the decision on whether or not the National Plan should be invoked in response to a nuclear or radiological emergency and if the NEEG should be convened.

The decision will be based on an assessment of the scale of the emergency exposure and its potential threat to Ireland. Triggers and operational criteria that may inform such a decision include:

- Notification through ECURIE and/or EMERCON of a nuclear or radiological emergency abroad, with the potential of causing widespread emergency exposure in Ireland;
- Notification through the bilateral agreement with the UK of a nuclear or radiological emergency, which similarly has the potential of causing widespread emergency exposure in Ireland;
- Radiological monitoring stations across Ireland (as referenced in Section 5.3) returning readings in excess of the reference levels or operational intervention levels set by the EPA (as referenced in Section 5.4 and set out in Appendix II);
- An emergency exposure situation occurring that poses a threat to public safety or health, social and economic functioning, damage to infrastructure, property or to the environment on a scale that requires a co-ordinated multi-agency national level response;
- An emergency exposure situation occurring that requires a “whole of Government” coordinated national level approach involving the convening of the National Emergency Coordination Group (NEEG) as per the provisions of **Strategic Emergency Management (SEM) National Structures and Framework**, and/or regionally or locally through the structures under the **Framework for Major Emergency Management**;
- Where the public interest demands national level co-ordination of a response effort;
- Where advice, resources, or support are required from a number of sources that are outside the remit of the LGD or the principal response agencies;
- Where the LGD is of the view that there is an imperative to raise the response to the national level;
- In certain circumstances where international assistance is required from another

- jurisdiction, or is sought by another jurisdiction in response to an emergency;
- Where an emergency is not deemed to have occurred, but is expected or anticipated; or,
- Other such circumstances as may be identified by the LGD.

6.2 Activation and composition of the NECG

In the event that the LGD decides a national response is required to a nuclear or radiological emergency exposure, it will inform the Office of Emergency Planning (OEP) of that decision.

The OEP will then invoke the arrangements to convene the NECG, and meetings will be chaired by the LGD, as set out in the SEM and associated [Guidelines for Co-ordinating a National Level Emergency/Crisis Response](#)²⁹. The roles of the NECG during response are set out in these documents.

In line with Annex A of the SEM document, support shall be provided by:

- Environmental Protection Agency
- Dept. of Health
- Dept. of Defence
- Dept. of Foreign Affairs and Trade
- Teagasc
- Dept. of Finance
- Dept. of Transport, Tourism and Sport
- Revenue Commissioners
- An Garda Síochána
- Irish Water
- Dept. of Agriculture, Food and the Marine
- Local Authorities
- Health Service Executive
- Met Éireann
- Irish Coast Guard
- Food Safety Authority of Ireland (FSAI)
- Civil Defence
- Defence Forces
- RTÉ and other broadcasters

Any plans prepared by departments or agencies setting out their response measures to national emergencies should include provision for measures to support the national coordinated response to a nuclear and radiological emergency exposure situation, corresponding with their statutory functions. The EPA, as primary competent authority, shall develop a detailed sub-plan setting out its response measures for nuclear and radiological emergency exposure situations.

²⁹ <https://www.emergencyplanning.ie/en/media/11>

6.3 Responding to a nuclear or radiological event abroad

Actions required during the response stage to a nuclear or radiological incident abroad, which is likely to cause widespread emergency exposure in Ireland, may be divided into three distinct phases:

1. **The Alarm Phase:** Immediate precautionary actions while the radioactive plume approaches Ireland.
2. **The Exposure Phase:** Monitoring and analysis actions while the radioactive plume passes over Ireland.
3. **The Reaction Phase:** Implementing further protective actions for the duration of the emergency, as required, based on relevant findings, recommendations, and expertise.

6.3.1 Actions required during The Alarm Phase

The immediate priorities upon receipt of notification of an impending emergency exposure situation will be notifying the general public, and implementing initial protective measures. Actions required will include:

- The convening of a precautionary NECG meeting.
- An EPA technical assessment team to monitor ECURIE, EMERCON, EURDEP, and/or RIMNET alerts and data, as appropriate.
- EPA to provide confirmation to the NECG that its national network of radiation monitoring stations is functioning correctly.
- Met Éireann to assess wind direction and speed, and other meteorological conditions (current and projected), and how they are likely to affect dispersal of the approaching radioactive plume.
- An NECG Communications Subgroup (see Appendix III) to relay information to the general public on the impending exposure and recommended actions, via the broadcast media, social media, and the website **www.nuclear.ie**
- The NECG Communications Subgroup to also relay other information, as appropriate, to sectors such as agriculture and health, in line with decisions taken by the NECG and informed by the input of the LGD, EPA, and representatives of those sectors.

As the Hazard Analysis studies referred to in Section 3 and further outlined in Appendix I foresee no situation where evacuation of the general public will be required, and instead conclude that the most appropriate action is likely to be short-term sheltering (24 to 48 hours), in line with international best practice, the basic initial message to the general public will be:

“Get In – Stay In – Tune In”

i.e. Get indoors as soon as possible, stay indoors insofar as possible until advised otherwise, and tune in to **Irish** broadcast media for further updates.

Further details related to the exposure and recommended actions should be broadcast to the public as they become available. Guidance on public information bulletins and media briefings is outlined in Appendix III.

6.3.2 Actions required during The Exposure Phase

This will be the critical response phase as the radioactive plume passes over Ireland. Radiological monitoring will inform decision-making, and constant effective communication with all stakeholders and with the general public will be crucial. Actions required will include:

- EPA technical assessment team to continue monitoring of ECURIE, EMERCON, EURDEP, and/or RIMNET alerts and data, as appropriate.
- EPA to also continue monitoring data from its national network of radiation monitoring stations, to assess changes in radiation levels being experienced, and how they may differ across various locations.
- Met Éireann to provide current and forecasted data regarding wind speed, wind direction, projected rainfall, etc., to allow prediction of the continued pathway of the plume over Ireland and its likely effects.
- NECG as a whole to use such data and predictions to consider any further appropriate public protective measures, subject to the following guidelines:
 - Any consideration by NECG of a protective action or countermeasure should ensure a balance is sought between the scientific and technical advice provided, and the impact of the proposed action or measure. This is particularly relevant when considering sheltering, travelling, commuting, working outdoors, and consumption of drinking water, dairy products, and other

foodstuffs. There may be a need for sector-specific protective actions, e.g. emergency workers, Local Authority staff, farmers, etc.

- The timings of any protective action should also be considered (i.e. when to start the action, and when to end it). Any protective action should be kept in place for as short a time as appropriate.
- Individual departments, agencies, and other bodies will be responsible for implementing protective actions in their own areas of competence.
- The NECG representative of each department, agency or other body will report back to their own organisation regarding protective measures, and liaise with them regarding implementation.
- The NECG Chair may form implementation sub-committees to monitor and report on progress of protective measure implementation.
- The NECG Communications Subgroup to provide regular information bulletins regarding the plume, its effects, and protective actions required to all stakeholders and to the general public.

6.3.3 Actions required during The Reaction Phase

Once the plume has mostly or wholly passed over Ireland, arrangements will begin to be made for the longer-term response to the emergency. Sampling of air, water, soil, and foodstuffs will be instrumental in the decision-making process. Actions required will include:

- Mobilisation of teams of personnel to gather required samples at locations across Ireland³⁰. Stakeholder bodies may be responsible for gathering of samples from their own areas of responsibility, e.g.:
 - Irish Water may gather samples of drinking water.
 - Department of Agriculture, Food and Marine and the FSAI may gather samples of milk, meat, grains, etc.
 - Met Éireann may collect air and rain samples from weather stations.

³⁰ While precautionary advice to stay indoors may be given to the public, the dose rates experienced outdoors even while a radioactive plume is passing would be expected to be low. It is envisaged that such dose levels would not require the use of any specific personal protective equipment by personnel in performing these functions. Nor is it envisaged that any special precautions would need to be taken by others such as farmers and outdoor workers.

- All such samples will be brought to designated laboratories for testing/monitoring, and subsequent results to be immediately relayed to NECG.
- NECG to also receive data from ongoing gamma dose rate monitoring at EPA stations nationwide, and of other such monitoring as may be carried out by the Defence Forces, the Civil Defence, and/or others.
- Provision of medical care as required.
- Results of all sampling and monitoring to be considered by NECG in formulating recommendations for longer-term protective measures.
- NECG to begin considering provisions for the transition from an emergency exposure situation to an existing exposure situation (“The Recovery Phase” – See Section 7).

6.3.4 Regulations and Orders to be made by certain Ministers

For the purpose of protecting individuals from radiological hazards in the reaction phase, the **Radiological Protection Acts 1991-2018** provide that certain Ministers may make regulations in accordance with the provisions of those Acts:

- **Section 32 of the Radiological Protection Act 1991**³¹ provides that the Minister for Agriculture, Food and Marine may regulate the transport, sale, consumption, slaughter, disposal or harvesting of food, crops, animals, fish and other flora and fauna. It further provides that the Minister for Health may regulate the import or export of any food.
- **Section 31 of the Radiological Protection Act 1991**³² provides that the Minister for Housing, Planning and Local Government may give such directions as he/she considers necessary to protect and inform users of any water supply intended for human consumption (whether public or private).

³¹ <http://www.irishstatutebook.ie/eli/1991/act/9/section/32/enacted/en/html>

³² <http://www.irishstatutebook.ie/eli/1991/act/9/section/31/enacted/en/html>

6.3.5 Assisting Irish citizens abroad

The Department of Foreign Affairs and Trade will have prime responsibility for providing assistance to Irish citizens in the vicinity of the location of the nuclear or radiological event, and for other associated tasks. Actions required will include:

- Providing consular assistance to Irish citizens who are directly or indirectly affected by the emergency event.
- Providing advice to Irish citizens abroad on the consequences of the event.
- Managing enquiries relating to Irish citizens abroad.
- Co-ordinating with EU member states on travel advisories to Irish citizens intending to travel to affected regions.
- Acting as a link between the EU and the NECG on crisis management co-ordination.
- Obtaining information from Irish embassies abroad for the NECG.
- Liaising with EPA and DCCAE on any necessary arrangements regarding the Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency.

6.4 Responding to a localised nuclear or radiological event in Ireland

As previously noted, prime responsibility for dealing with a localised nuclear or radiological emergency exposure within Ireland rests with either the relevant local authority or with the licensed undertaking responsible for the radiation source causing the exposure.

In some instances however, such an exposure may require a centrally co-ordinated national level response, and thus the NECG may convene and act as set out above.

It is likely that the actions outlined will be required only in the affected area in the vicinity of the exposure. In addition, the presence of some of the bodies listed in Section 6.2 may not be required at NECG. The DCCAE, as LGD, will advise on which bodies should be present, and will oversee the coordination of roles by the NECG.

SECTION 7: RECOVERY

7.1 Introduction

Hazard analysis studies indicate that the most significant and long-lasting consequences for Ireland of a nuclear emergency exposure situation would be most likely socio-economic in nature, rather than related to public health. There would be particular consequences for agriculture and the wider food production sector.

Four scenarios, covering a range of severity of impacts, were postulated and analysed in detail in an ESRI study, *The Potential Impact of a Nuclear Accident – An Irish Case Study (2016)*. It predicts the total economic costs to Ireland of each of those scenarios.

Measures to attempt to minimise these costs will be the focus of the Recovery Stage. This stage can also be regarded as response to an existing exposure situation.

7.2 Transition from an emergency exposure situation to an existing exposure situation

A key part of the termination of the emergency and the transition from an emergency exposure situation to an existing exposure situation will be the handover from the NECG to the designated body leading on recovery, as outlined in the SEM document. However, the Recovery Phase may commence while the Response Phase is ongoing, with the LGD initiating immediate recovery measures.

Detailed criteria for the deactivation of the emergency response measures are set out in Appendix IV.

7.3 Issues to be dealt with during Recovery

The Recovery Phase will continue to require a “whole of Government” approach, and the coordination structure of the recovery effort will be based on the nature and scale of the lasting elevated exposure.

To assist the longer-term recovery effort, the Minister for Communications, Climate Action and Environment will develop a strategy for dealing with contaminated areas and existing exposure situations, in accordance with Regulation 56 of the **IRR 2019**.

Necessary cross-governmental activities are likely to include:

- Providing up-to-date information to the public.
- Ongoing monitoring of food and the environment for radioactivity levels.
- Ongoing agricultural and food production measures to prevent or reduce the transfer of radioactivity to food and animal feed.
- Supporting a return to normal socio-economic activity if required. This may include measures to address Ireland's reputation as a quality food-producing country for export markets.
- Making provisions for waste management of radioactive and non-radioactive wastes.
- Considering compensation for losses.

A high level of stakeholder engagement can be expected with respect to recovery issues. The involvement of stakeholders will improve the development and implementation of appropriate strategies for the ongoing recovery.

7.4 Recovery plans

To efficiently manage the ongoing recovery strategy, a detailed Recovery Plan should be developed by the LGD and each department, agency, or other body with responsibility for any aspect of the recovery. Each plan should address the characteristics of the post-emergency situation and the identified recovery issues. These plans can only be elaborated in detail in response to the specifics of any situation that may arise. Such plans should take account of the guidance provided on the Recovery Phase in Chapter 7 of the SEM document.

SECTION 8: REVIEW

8.1 Testing and review

This National Plan will be tested regularly through exercises, including the IAEA's ConvEx and NEA's INEX exercises for emergency preparedness and response. This plan may be reviewed and amended after each exercise or emergency situation, according to lessons learned.

Review and revision may also take place if there are significant new developments in the field of EPR (Emergency Preparedness and Response) planning for nuclear or radiological emergency exposure situations.

This plan should also be reviewed following any major nuclear or radiological emergency exposure situation which causes the measures outlined herein to be invoked. The plan may be updated according to lessons learned.

APPENDIX I

HAZARD ANALYSIS STUDIES

Detailed hazard analysis studies on the likely impact on Ireland of an emergency situation at a nuclear power plant in the UK have been carried out. They are:

- (i) [Proposed nuclear power plants in the UK – potential radiological implications for Ireland](#)³³, which focuses on eight proposed new-build power plants at locations including Wylfa and Hinkley Point (RPII, 2013), and
- (ii) [Potential radiological impact on Ireland of postulated severe accidents at Sellafield](#)³⁴ (EPA, 2016).
- (iii) [Risks to Ireland from incidents at the Sellafield site](#)³⁵ (2008)

A fourth study, [The Potential Economic Impact of a Nuclear Accident – An Irish Case Study](#)³⁶, was conducted by the ESRI and deals with the possible socio-economic costs to Ireland of a nuclear or radiological accident or incident abroad.

The principal findings of report (i) are:

- Given the prevailing wind direction in Ireland, radioactive contamination in the air will most often be transported away from Ireland. The assessment used a weather pattern that maximised the transfer of radioactivity to Ireland.
- The routine operation of the proposed UK nuclear power plants will have no measurable radiological impact on Ireland or the Irish marine environment. The radiation doses calculated due to the routine operation of the power plants were 10,000 times lower than the annual radiation dose limit for a member of the public.
- The severe accident scenarios assessed ranged in their estimated frequency of occurrence from 1 in 50,000 to 1 in 33 million per reactor per year. In the least severe situation postulated, the radioactivity levels would not be high enough to warrant short-term measures in the immediate aftermath of the accident, but food controls and/or temporary agricultural protective actions would be required for a period of days to weeks afterwards.

³³ http://www.epa.ie/pubs/reports/radiation/RPII_Proposed_Nuc_Power_Plants_UK_13.pdf

³⁴ https://www.epa.ie/pubs/reports/radiation/Potential_radiological_impact_Ireland.pdf

³⁵ <https://www.dccae.gov.ie/en->

[ie/environment/publications/Documents/15/Risks%20to%20Ireland%20from%20Incidents%20at%20Sellafield.pdf](https://www.dccae.gov.ie/en-)

³⁶ <https://www.esri.ie/system/files?file=media/file-uploads/2016-12/BKMNEXT313.pdf>

- In the most severe situation postulated, short-term measures such as sheltering would be warranted in the immediate aftermath of the accident to reduce exposure of the population and so mitigate long-term health effects. Food and agricultural produce would be heavily contaminated and food controls and protective actions would be required for many years to reduce radiation doses from consumption of contaminated food.
- Regardless of the radiological impact, any accident at the proposed nuclear power plants leading to an increase of radioactivity levels in Ireland would have a socio-economic impact on Ireland.
- A major accidental release of radioactivity to the Irish Sea equivalent in size to that after the Fukushima accident would not require any food controls or protective actions in Ireland. However, enhanced monitoring of the marine environment would be required.
- Evacuation from the east coast of Ireland would not be deemed an appropriate action even in the most severe of the scenarios that were postulated.

The principal findings of report (ii) are:

- An incident at the Sellafield nuclear fuel reprocessing site or the Low-Level Waste Repository near that site would result in no observable health effects in Ireland.
- Some unlikely incidents at Sellafield or the Low-Level Waste Repository have the potential to create significant socio-economic impacts in Ireland. These impacts may include loss of tourism and markets for Irish seafood and farm. The likelihood of such incidents ranges from very low (less than a 30% chance anytime over the next 100 years for the more modest releases that remain near the Sellafield Site) to extremely unlikely (less than a 0.05% chance over the next 100 years for the more extreme cases with the potential to release materials well beyond the site boundary). These very rare severe incidents are largely associated with extreme environmental events such as severe earthquakes and very strong winds (greater than 165 mph), or incidents originating outside the Sellafield Site that can impact it, such as strikes by meteorites or by aircraft or missile crashes.

- Lesser incidents are more likely, but these would not lead to significant releases of radioactive materials. These lesser incidents would primarily involve failures of individual pieces of equipment and human errors that reduce facility and safety capability, or incidents that release radioactive materials from their normal boundaries but still contain such materials within the facility. The risk of releases of radioactive materials that could impact Ireland from these incidents originating within facilities at Sellafield is low because of the design of the processing systems there.
- The expert team examined similar kinds of incidents for the Low-Level Waste Repository. Of the range of incidents examined, only an unlikely one in which an aircraft crashed directly into the waste materials had the potential for any releases in the short term. Such a release would result in no observable health effects in Ireland.
- The expert team also examined a very long-term event: Hundreds of years from now, rising sea levels and severe coastal storms could cause the entire contents of the Low-Level Waste Repository to be released into the Irish Sea. Radioactive materials decay predictably over time, in this way becoming less harmful to human health and the environment. If in the far future the radioactive material in the repository does empty into the Sea, the radioactive materials will have reached less harmful levels by that time. In addition, the materials would be diluted by seawater and currents. Based on calculations that overestimate the consequences of such a release, the increase in radioactivity levels in seawater would be barely detectable anywhere near the coast of Ireland.

The principal finding of report (iii) was:

- An incident at Sellafield or the Low-Level Waste Repository would result in no observable health effects in Ireland.

This was based on how the PRA (Probabilistic Risk Assessment) calculated the consequences from three different realistic release scenarios with varying capability to loft radioactive materials high in the air so that the materials could be transported significant distances beyond the site boundary. For each of these three scenarios, the team then calculated how the materials could be dispersed in the atmosphere and potentially deposited in Ireland. A companion calculation considered a release of a portion of the contents of a storage tank containing among the most highly concentrated radioactive materials at Sellafield. The analysis showed that some radioactive materials could reach Ireland but at

levels far below the dose levels that could cause observable health effects and well below the level of background radiation people normally receive each year. For all other PRA scenarios, doses would be much lower. While radioactive materials from the release could be detected using sensitive measurement equipment, the levels would not be enough to cause observable health effects in Ireland.

APPENDIX II

REFERENCE LEVELS & OPERATIONAL INTERVENTION LEVELS

A reference level in an emergency exposure situation or in an existing exposure situation is the level of effective dose or equivalent dose or activity concentration above which it is judged inappropriate to allow exposures to occur as a result of that exposure situation, even though it is not a limit that may not be exceeded.

The reference level refers to the total residual dose (the dose that would arise after the protection strategy is implemented)

A reference levels is a tool for optimisation. Optimisation of protection is not simply a minimisation of dose. It involves carefully balancing the detriment so that the best option may not necessarily be the one which gives rise to the lowest dose. Therefore, in a nuclear or radiological emergency the reference level should be used to optimise the protection of members of the public, taking account of both radiological protection and socio-economic criteria.

Reference Levels for members of the public

For emergency exposure situations, the reference level expressed in terms of effective dose for all exposure pathways for members of the public is 100 mSv per year. A reference level below 100 mSv may be set in an emergency exposure situation where appropriate protection can be provided without causing a disproportionate detriment from the corresponding countermeasures or an excessive cost.

Throughout the emergency phase the need for protective actions should be assessed continually. The overall aim is to ensure that the residual dose (expected dose after protective actions have been implemented) does not exceed the reference level and is as low as reasonably achievable.

Reference Levels for emergency occupational exposure

Reference levels for emergency occupational exposures apply to emergency workers or other persons involved in taking response actions or protective measures in an emergency. They should not exceed an effective dose of 100 mSv and where possible should remain below statutory dose limits. In exceptional circumstances, for example, to save human lives, prevent severe radiation-induced health effects, or prevent catastrophic conditions, a dose in excess of 100 mSv but not exceeding 500 mSv may be permitted where the person has been clearly and comprehensively informed of the associated health risks of such an action and the available protection measures in advance of agreeing voluntarily to undertake such an action.

Transition from an emergency to an existing exposure situation

For the transition from an emergency exposure situation to an existing exposure situation, an appropriate reference level for members of the public shall be set at a value of 20 mSv or less. This reference level shall take account of the features of the prevailing situation as well as societal criteria.

Generic Criteria

Dose criteria expressed in terms of projected dose have been defined for various protective measures (IAEA General Safety Guide No. GSG-2, 2011). These generic criteria are compatible with a reference level of 100 mSv. Taking protective actions at this level of dose will ensure all deterministic effects are avoided and the risk of stochastic effects are reduced to acceptable levels. The generic criteria established by EPA are given in the following table.

Table 1: Generic Criteria for protective actions and other response actions in emergency exposure situations

Protective action	Projected dose	Notes
Sheltering	50 mSv in the first 7 days	Most effective during passage of the plume. Can reduce doses from ground shine, cloud shine and inhalation pathways by up to 80%
Evacuation	100 mSv in the first 7 days	
Temporary relocation	100 mSv in first year	Largely to avoid radiation dose from ground shine pathway
Food controls	1 mSv in the first year	EU Maximum Permitted Levels (MPLs) in food for sale would be introduced. The aim of MPLs is to keep the total radiation dose from foodstuffs in the first year after the emergency below 1 mSv.

Operational Intervention Levels

Projected dose is not a measurable quantity and cannot be used for fast decision making in an emergency. Operational Intervention Levels (OILs) are levels derived from the generic criteria which are used for taking decisions on protective actions and other response actions in the early phase of a nuclear or radiological emergency. They are measurable values such as dose rate, radioactive contamination and activity concentration. Field and monitoring data are compared to OILs to determine which protective actions should be implemented. If OIL is exceeded or expected to be exceeded, then the associated protective action should be implemented. Protective actions may also be implemented at lower levels. The following basic OILs have been established by EPA:

Table 2: Operational Intervention Levels for protective actions and other response actions in emergency exposure situations

Protective action	OIL	Notes
Sheltering	500 $\mu\text{Sv/h}$ 5,000 Bq/m^3 5,000,000 Bq/m^2	External gamma dose rate Cs-137 in air Cs-137 deposition on ground
Evacuation	1,000 $\mu\text{Sv/h}$ 10,000 Bq/m^3 10,000,000 Bq/m^2	External gamma dose rate Cs-137 in air Cs-137 deposition on ground
Temporary relocation	100 $\mu\text{Sv/h}$ 1,000 Bq/m^3 1,000,000 Bq/m^2	External gamma dose rate Cs-137 in air Cs-137 deposition on ground
Food Controls	1 $\mu\text{Sv/h}$ 20 counts/s 2 counts/s 100 Bq/kg 5 Bq/kg	External gamma dose rate Direct beta surface contamination Direct alpha surface contamination Gross beta activity concentration Gross alpha activity concentration

APPENDIX III

PUBLIC INFORMATION BULLETINS & MEDIA BRIEFINGS

A NECG Communications Subgroup comprising GIS, DCCAE, EPA, Met Éireann, DAFM, DoH, DFAT, OEP and press officers from other relevant departments and agencies will be established once NECG is activated. This Subgroup will oversee the dissemination of accurate and up-to-date information to both the general public and the media.

Some key points are:

Initial Messaging

- The first press release will be triggered by the LGD, in consultation with Government Press Office and the Government Information Service. This message will announce:
 - Details of where the emergency has occurred or is occurring;
 - Whether there has been a release of radioactive material, or if a release is likely;
 - Details of any necessary immediate protective actions, such as sheltering;
 - An assurance that the situation is being monitored, and that regular updates will follow;
 - An estimate as to when the first update may be expected.
- This press release will be published online on www.merrionstreet.ie, www.emergencyplanning.ie and on www.nuclear.ie.
- RTÉ or other media outlets may be requested to broadcast emergency public information messages in the manner covered by appropriate emergency broadcasting protocols (if the situation requires it).
- Prior to and during the passage of a radioactive plume, Met Éireann will also include relevant information in radio and television weather forecasts.

Media Briefings

- Media briefings will be held at the NECC following meetings of the NECG. These should be timed to allow them feed into main news bulletins (1 pm, 6 pm and 9 pm).

For example, the first (or daily) NECG meeting should start by 9.30 am in order to have media briefings prepared for a noon press conference and the 1 pm news bulletins.

- In addition to these briefings spokespersons will be required for key media interviews on national broadcasters, and to prepare a 2-minute recording for use by regional radio stations.
- Key departments are required to provide expert spokespersons who have attended the NECG meetings and are aware of the key messages. This requirement will be determined by the LGD. It is anticipated that the key spokespersons will initially include the NECG Chair, the Chief Medical Officer (Dept. of Health), the Chief Veterinary Officer (DAFM), an EPA radiological expert, a Met Éireann forecaster and a FSAI expert. Other experts or officials from departments/agencies may be required to be on standby to field questions from the media as appropriate. As appropriate, the press conferences and key interviews may be led by the Taoiseach and/or the appropriate Ministers.
- Sign language interpreters should be used during all televised/recorded press conferences.

Online media

- The website **www.nuclear.ie** will be updated regularly, with details of the emergency, protective actions required, and possible effects of the exposure.
- Social media will also be a key communications tool and should be used appropriately.
- Messaging in languages other than English may be required, to ensure effective communications to as many sectors of society as possible.

Key messages

- Considerable preparation and care will be needed by all staff in preparing key messages for the news media. Nuclear or radiological emergencies could give rise to alarm among the public who may not be aware of that such emergencies pose a low risk to public health.

- The messages from each government department and relevant body must be coordinated. There should be read through of the messages amongst the NECG Communications Subgroup. This is particularly important in advance of the first media briefing and press statement. This measure should apply to the internet and social media channels as well as traditional press releases and other media briefings.
- Consideration should be given to the coordination of messages with neighbouring states. This will be achieved through bilateral contacts with the UK and through EU counterparts networks (e.g., through ECURIE, HERCA, Foreign Ministries network, etc.)
- The NECG Communications Subgroup will monitor broadcast, internet, social media and print media output to detect and correct any significant misconceptions regarding the public advice already given. Consistency and accuracy of information will be important factors

Logistics

- The DCCAE press officer, in conjunction with the Government Press Office, will be required to lead on dealing with media agencies and to assist in the production of press statements for the NECG and ensuring statements are prepared in time for key media time slots.
- There is a need to take into consideration the amount of time and staff resources required to deal with media and press queries. This needs to be shared amongst all key departments and agencies, especially in the first 24 hours.
- In the event of a large national-level emergency, there may be a continuous media interest in the event. This will need to be managed appropriately by the LGD, the NECG and appropriately managed in the NECC.
- If media outlets request information or briefings in addition to the press conference, this must be requested in advance through the DCCAE press office.

Additional guidance

- Ideally, press statements should be at most one page with any protective actions in one paragraph.

- Media briefings should be kept to two minutes for each major media outlet.
- It is not a requirement for the NECG Chair (and other designated spokespersons) to handle all media interviews. However, alternates dealing with any queries should have the relevant knowledge and expertise in accordance with agreed Communications Strategies and Plans.
- Appropriate training and experience will be required in advance.
- Clear and timely public safety messages and advice must be given, outlining the reasons for taking or not taking certain protective actions.
- A designated Communications Manager/Official with media experience, who is aware of the media production requirements, particularly the timing of media news cycles, should be assigned with the responsibilities for assisting in the co-ordination of responses to the media.

APPENDIX IV

CRITERIA FOR DEACTIVATION OF AN EMERGENCY RESPONSE

- All necessary urgent and early protective actions have been implemented.
- Situation stable and well understood (source of exposure has been brought under control and no further significant accidental releases are expected due to the event).
- Radiological situation sufficiently well characterised so that exposure pathways have been identified and doses assessed for all the affected population groups. This characterisation will have considered the impacts from lifting and adapting the protective actions implemented earlier in the emergency response and, where applicable, possible future land use options.
- A thorough hazard assessment of the current situation and its future development has been performed. On the basis of the results of the hazard assessment, potential emergencies warranting protective actions and other response actions should be identified and the existing emergency arrangements have been reviewed and updated where necessary (at least on an interim basis).
- The requirements for occupational exposure as for planned exposure situation can be applied for all workers to be engaged in recovery activities.
- The assessment of the radiological situation has demonstrated that the residual dose is in the band of 1-20 mSv/year.
- Non radiological consequences (psychosocial, economic) and other factors (technology, land use options, availability of resources, community resilience) relevant to the termination of the emergency have been identified and considered.
- A registry of those individuals identified to require further medical follow up has been established.
- A strategy for management of radioactive waste arising from the emergency, when appropriate, has been developed.
- Consultation on the decision to terminate the emergency has been carried out through the NECG with interested parties and, as appropriate, the following has been communicated to

the public and other interested parties:

- The basis for the termination of the emergency;
- The need for adjustments of imposed restrictions;
- Any necessary modification in the personal behaviours and habits;
- The need for continuing protective actions in place or for introducing new ones;
- The need for continued environmental, source and individual monitoring following the termination to the emergency;
- Health hazards associated with the new exposure situation.

The DCCAE, as the LGD, will be responsible for the coordination of and reporting on the post emergency review following the termination of the emergency.