



Office for
Nuclear Regulation

**Determination of the Requirement for Off-site Emergency Planning and Prior
Information Areas for the GE Healthcare Cardiff Nuclear Licensed Site: Radiation
(Emergency Preparedness and Public Information) Regulations 2001**

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EXECUTIVE SUMMARY

Determination of the requirement for Off-site Emergency Planning and Prior Information Areas for the GE Healthcare Cardiff Nuclear Licensed Site: Radiation (Emergency Preparedness and Public Information) Regulations 2001

The Office for Nuclear Regulation (ONR) is responsible for regulating GB nuclear sites in order to protect the health and safety of employees and the public against risks of harm arising from ionising radiations. ONR's responsibilities include a legal duty, where it is concluded that there is a potential for a reasonably foreseeable radiation emergency (as defined in the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPIR)), to determine an off-site emergency planning area¹ (i.e. the area within which, in ONR's opinion, any member of the public is likely to be affected by such an emergency). In these cases, there is also a legal duty, under the same Regulations, for ONR to determine an area² within which prior information is to be distributed to the public. A radiation emergency is defined in REPPIR as an event where a person off-site is likely to receive a radiation dose in excess of the thresholds in REPPIR (typically an effective dose in excess of 5 mSv) in the 12 months following the emergency. Where ONR determines an off-site emergency planning area, the relevant local authority must prepare an emergency plan for the protection of persons in that area and the operator must provide prior information. It therefore constitutes an important component of the UK's overall emergency response framework.

This ONR Project Assessment Report (PAR) describes and explains the basis for its review, in accordance with REPPIR, of the requirement for an off-site emergency planning area and the area within which prior information is to be distributed to persons around this nuclear licensed site.

REPPIR requires operators who carry out work involving quantities of radioactive materials at or beyond that which it specifies, in this case GE Healthcare, to undertake a Hazard Identification and Risk Evaluation (HIRE) in relation to their work with ionising radiations. The HIRE must identify all hazards on the site with the potential to cause a radiation accident, and evaluate the nature and magnitude of the risks to employees and other persons (e.g. those who live or work nearby) arising from those hazards. REPPIR also requires operators to assess their HIRE and to submit a Report of Assessment (RoA) to ONR either prior to commencement of the work with ionising radiation, following any relevant material change in this work, or within three years of the last assessment, whichever is the shorter.

Previous determinations by ONR for the GE Healthcare Cardiff Nuclear Licensed site have concluded that a radiation emergency is not reasonably foreseeable and have therefore not specified an off-site local authority emergency planning area or prior information area.

This re-determination has been undertaken in response to the latest REPPIR submission to ONR by GE Healthcare. This submission reassessed the existing HIRE for the Cardiff Nuclear Licensed Site (previously known as the Maynard Centre) and concluded that:

'...there is no potential reasonably foreseeable radiation emergency arising from operations at the Maynard Centre'

ONR has made an assessment of the operator's technical submissions in accordance with its regulatory processes, guidance associated with REPPIR itself, and the relevant ONR technical assessment guide. The ONR assessment agrees with the GE Healthcare conclusion that a radiation emergency at the Cardiff Nuclear Licensed Site is not reasonably foreseeable.

¹ ONR has historically used the term detailed emergency planning zone (DEPZ) to refer to the area it defined under REPPIR regulation 9 as requiring an off-site emergency plan. (The term is still used this way in some ONR guidance.) As the term is not used within REPPIR itself (although referred to in the related guidance), and to ensure legal clarity and avoid misunderstanding amongst stakeholders, this report refers to the 'REPPIR off-site emergency planning area' under regulation 9 rather than to 'detailed emergency planning zone' or 'DEPZ'.

² This is sometimes, and has historically been, referred to as the Public Information Zone (PIZ) under regulation 16, but for the same reasons as given above is not used in this report. This report refers to the 'REPPIR prior information area'

That being so, some aspects of REPIR, principally REPIR regulations 7(1), 9(1) and 16(1), relating to the operator's emergency plan and the identification of off-site planning and prior information areas, do not apply.

The recommendations of this report are that ONR write to:

- Cardiff City Council and GE Healthcare to notify them that, as a result of ONR's recent assessment, there remains no requirement for a REPIR off-site emergency planning area or a prior information area for the Cardiff Nuclear Licensed Site.

Whilst this review confirms there is no requirement for detailed emergency planning under REPIR in relation to the Cardiff Nuclear Licensed Site, proportionate emergency arrangements for the protection of the public remain in the form of;

- bodies such as local authorities have duties to make adequate emergency arrangements under other legislation such as the Civil Contingencies Act 2004;
- operators have general duties Under the Health and Safety at Work Act 1974 to ensure, so far as is reasonably practicable, the safety and welfare of employees and other persons;
- operators under REPIR regulation 4(2) shall, where radiation risks to employees or other persons have been identified during their HIRE, take all reasonable steps to prevent any such radiation accident and limit the consequences of an such radiation accident which does occur; and
- operators who hold a nuclear site licence are required to make and implement adequate arrangements for dealing with any accident or emergency (under site licence condition 11 attached to the nuclear site licence); and to prepare necessary contingency plans as required under the Ionising Radiations Regulations 1999.

Where ONR is the enforcing authority, ONR will continue to seek assurance that the operator remains compliant with these legal obligations, including any such provision and co-ordination of adequate off-site emergency arrangements as these other duties may require.

LIST OF ABBREVIATIONS

CCA	Civil Contingencies Act (2004)
CNLS	Cardiff Nuclear Licensed Site
DEPZ	Detailed Emergency Planning Zone (Ref: REPPiR regulation 9(1))
EURATOM	European Atomic Energy Community
FEPA	Food and Environment Protection Act 1985
FSA	Food Standards Agency
GB	Great Britain
HIRE	Hazard Identification and Risk Evaluation
HSE	The Health and Safety Executive
IAEA	The International Atomic Energy Agency
LC	Licence Condition
mSv	milliSievert
ONR	Office for Nuclear Regulation
PAR	Project Assessment Report
REPPiR	Radiation (Emergency Preparedness and Public Information) Regulations 2001
RoA	Report of Assessment
SAPs	(ONR) Safety Assessment Principles
TAG	(ONR) Technical Assessment Guide

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1 REGULATORY CONTEXT

The Energy Act (reference 1) requires the Office for Nuclear Regulation (ONR) to do whatever it considers appropriate for the purposes of protecting persons against risks of harm arising from ionising radiations from GB (Great Britain) nuclear sites, including:

- a) securing the health, safety and welfare of persons at work on GB nuclear sites; and
- b) protecting persons, other than persons at work on GB nuclear sites, against risks to health or safety arising out of or in connection with the activities of persons at work on GB nuclear sites.

ONR does this by providing regulation of the nuclear industry, holding it to account on behalf of the public, and, in particular, ensuring appropriate arrangements are in place to deal with a nuclear emergency.

ONR's responsibilities include a legal duty, where it is concluded that there is a potential for a reasonably foreseeable radiation emergency (as defined in the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPPIR) (reference 2)), to determine an off-site emergency planning area. This is the area within which, in ONR's opinion, any member of the public is likely to be affected by such an emergency³. In these cases, there is also a legal duty under the same regulations for ONR to determine an area within which prior information is to be distributed to the public⁴. A radiation emergency is defined in REPPPIR as a reasonably foreseeable event where a person off the site is likely to receive a radiation dose in excess of the thresholds in REPPPIR (typically an effective dose in excess of 5 mSv) in the 12 months following. It therefore constitutes an important component of the UK's overall emergency response framework.

2 BACKGROUND

The UK nuclear regulatory system requires that every licensee must demonstrate to the regulator that it fully understands the hazards and risks associated with its operations and controls them appropriately. The regulator assesses the safety and security of the design and operation of nuclear plant to ensure that licensees' provisions are robust and that any risks are reduced so far as is reasonably practicable.

In relation to emergency planning, REPPPIR requires the operator, in this case GE Healthcare, to undertake a Hazard Identification and Risk Evaluation (HIRE) of all hazards, arising from their work, with the potential to cause a radiation accident. The operator's assessment must be sufficient to demonstrate that all such hazards have been identified and the nature and magnitude of the risks to employees and other persons arising from those hazards have been evaluated. REPPPIR also requires that operators submit a report of the assessment (RoA) of this HIRE to ONR prior to commencement of the work with ionising radiation, following any relevant material change in this work, or within three years of the last assessment, whichever is the shorter. REPPPIR also makes provision for ONR to request additional information. In practice, it is usual for the HIRE itself to be requested to inform ONR's determination.

Where it is reasonably foreseeable that a radiation emergency (as defined in REPPPIR) could arise, REPPPIR requires ONR to determine areas within which, in its opinion, persons (including any member of the public) are likely to be affected by such emergencies. This then

³ ONR has historically used the term detailed emergency planning zone (DEPZ) to refer to the area it defined under REPPPIR regulation 9 as requiring an off-site emergency plan. (The term is still used this way in some ONR guidance.) As the term is not used within REPPPIR itself (although referred to in the related guidance), to ensure legal clarity and avoid misunderstanding amongst stakeholders, this report refers to the 'REPPPIR off-site emergency planning area' under regulation 9 rather than to 'detailed emergency planning zone' or 'DEPZ'

⁴ This is sometimes, and has historically been, referred to as the Public Information Zone (PIZ) under regulation 16, but for the same reason as given above is not used in this report. This report refers to the 'REPPPIR prior information area'.

defines the area for which local authorities are required to prepare an adequate off-site emergency plan (regulation 9(1)) and for which operators are required to provide specified prior information (regulation 16(1)) to members of the public without them having to request it and also make that information publicly available.

The off-site emergency plan, in cases where one is required, should include urgent countermeasures and other protection measures that are relevant, reasonably practicable, and proportionate to the radiological risk in the event of a reasonably foreseeable radiation emergency

In 2011 GE Healthcare submitted a RoA (reference 3) summarising the conclusions of its HIRE for the Cardiff Nuclear Licensed Site (previously known as the Maynard Centre) under regulation 6 of REPIR. In 2014, GE Healthcare submitted a re-assessment of the RoA (reference 4) the conclusion of both reports being “...there is no potential reasonably foreseeable radiation emergency arising from operations at the Maynard Centre.”

This report sets out the outcome and justification for the review of the need for emergency planning and prior information areas for the GE Healthcare Ltd Cardiff Nuclear Licensed Site (CNLS), in accordance with the requirements of REPIR regulations 9(1) and 16(1) respectively.

3 SCOPE

This report sets out the basis for, and conclusions of, the ONR assessment of the REPIR off-site emergency planning and prior information areas relating to the GE Healthcare CNLS. It has been undertaken in accordance with the guidance on REPIR (reference 5) and the supporting relevant ONR Technical Assessment Guide (TAG) (reference 6) which incorporates ONR’s principles for determination of REPIR areas, and related guidance.

ONR’s principles recognise the learning that has emerged from global events such as occurred at Fukushima (reference 7) and the subsequent need to review the scope of off-site emergency planning. They also reflect ONR’s commitment to high standards of nuclear safety at nuclear installations, and its continual efforts to seek improvements to standards and to the consistency and transparency of its decision making.

Provisions for the implementation of food restrictions are separate to the process of determining the REPIR off-site emergency planning area on the basis that they are provided separately (Food and Environment Protection Act 1985 (FEPA)) and are under the legal jurisdiction of the Food Standards Agency (FSA). These provisions are therefore addressed by separate legislation other than REPIR, which may be exercised in a broader range of circumstances (i.e. not restricted to a radiological event), and are subject to existing planned implementation arrangements made by the FSA. They are therefore outside the scope of this report.

4 METHODOLOGY

4.1 ONR’s PROCESS FOR DETERMINING A REPIR OFF-SITE EMERGENCY PLANNING AREA

This process requires that ONR:

- A. Conduct an initial independent technical assessment of the information provided by the licensee in their HIRE and RoA and seeking and using additional information as appropriate; and
- B. Where the potential for a REPIR defined reasonably foreseeable radiation emergency exists, establish and consider any other relevant practical and strategic factors relating to the planning and practical implementation of protection measures to restrict public exposure so far as reasonably practicable

(e.g. urgent countermeasures) for those persons who are likely to be affected by a radiation emergency.

Step A requires ONR to assess the operator's identification and characterisation of the likelihood, nature and magnitude of the radiation related risks that may result for a radiation accident. ONR also assess the operator's assessment of whether there is the potential for a radiation emergency to occur that is reasonably foreseeable. If this potential exists ONR will then consider the likely extent of any area within which the dose criteria contained within Schedule 1 of REPIR may be met or exceeded. This indicates the minimum distance for further consideration in Step B, and is usually presented in the operator's RoAs as a circle with a specified radius centred at the source of the potential accident.

Step B applies additional pragmatic, population (including vulnerable groups), geographic and practical factors to the ONR determination and requires dialogue with the relevant local authority. The nature of these factors is set out in detail in the relevant ONR TAG (reference 6). Whilst the determined REPIR off-site emergency planning area, as a result of considering these additional factors, need not be circular, it cannot be smaller than that arising from the technical assessment under Step A.

4.2 BASIS OF ASSESSMENT

The REPIR off-site emergency planning area must, as a minimum, include all of the area around the site within which a person (including members of the public) could receive an effective dose in excess of 5 mSv in the year following a reasonably foreseeable radiation emergency (or other dose criteria defined in REPIR Schedule 1). When assessing the extent of exposure, REPIR requires that operators assess the potential doses to members of the public from all exposure routes and, for this purpose, must disregard any health protection measures that may have been taken by the local authority, emergency services or the exposed persons themselves, during the first 24 hours immediately following the event.

The CNLS RoA/HIRE (reference 3), produced in 2011, provides a description of the plant and buildings containing radioactive substances on the site which exceed the levels specified in Schedule 2 of REPIR. The radionuclides present in the plant and buildings above Schedule 2 values were Tritium and C-14 (carbon-14).

The inventory has not increased since the 2011 RoA and until such a time as the total inventory of radioactive material held on the CNLS falls below the stringent levels specified in Schedule 2 and 3 of REPIR some (although not all) provisions of REPIR will continue to apply.

4.3 STANDARDS AND CRITERIA

4.3.1 ACTS, REGULATIONS AND GUIDANCE

The relevant standards and criteria considered within this assessment are those contained within the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPIR) (reference 2) and its associated guidance (reference 5). REPIR is made under the Health and Safety at Work Act etc. 1974 and implements the articles on intervention in cases of radiation emergencies contained in the European Council Directive 96/29/EURATOM - Basic Safety Standards for the Protection of the Health of Workers and Members of the Public against the Dangers from Ionising Radiation (reference 8).

4.3.2 SAFETY ASSESSMENT PRINCIPLES & LICENSE CONDITIONS

ONR's Safety Assessment Principles (SAPs) provide inspectors with a guiding framework for making consistent regulatory judgements on nuclear safety cases. Although the SAPs are not directly relevant to the assessment of REPIR submissions, cognisance has been taken of SAP: AM.1 - Accident management and emergency preparedness (reference 9).

4.3.3 TECHNICAL ASSESSMENT GUIDES

The SAP principles are supported by a suite of internal Technical Assessment Guides (TAG), with the following TAG being relevant to this assessment:

- The technical assessment of REPIR submissions and the determination of detailed emergency planning zones, ONR NS-TAST-GD-082 Revision 2, 2013 (reference 6). This TAG incorporates ONR's revised principles for determination of REPIR off-site emergency planning areas.

4.3.4 NATIONAL AND INTERNATIONAL STANDARDS AND GUIDANCE

The following national guidance has also been considered and, where appropriate, has informed this assessment:

- A guide to the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (reference 5).

ONR also notes the relevance of the following International Standards and Guidance:

- IAEA Safety Standard Series – Preparedness and Response for a Nuclear or Radiological Emergency GS-R-2 (reference 10).
- IAEA Safety Standards – Arrangements for Preparedness for a Nuclear or Radiological Emergency GS-G-2.1 (reference 11).

5 ASSESSMENT OF TECHNICAL SUBMISSIONS

ONR has subjected GE Healthcare's RoA and HIRE (references 3 and 4) and supporting documentation to expert and detailed technical assessment. A summary of GE Healthcare's submissions and ONR's technical assessment of them (reference 12) are detailed in sections 5.1 and 5.2 respectively.

5.1 GE HEALTHCARE RoA/HIRE

GE Healthcare is involved in the development and manufacture of products for medical diagnostic imaging, radiotherapy and products for the medical and biochemical research. The GE Healthcare CNLS was involved in radio-pharmaceutical production until this work ceased in 2010. The CNLS facilities have, since 2010, been undergoing a programme of post operational clean-out (POCO) and decommissioning and so current radioactive substance inventories are stored solely as wastes. Since 2010, the quantities of radioactive material stored on the site have continued to reduce as material is disposed of through approved routes.

In May 2015, the GE Healthcare CNLS, then known as the Maynard Centre (Cardiff), was re-licensed by the ONR. The re-licensing process was to reflect the reduction of the site footprint with the re-licensed CNLS site having a smaller site boundary than the original Maynard Centre. The re-licensing and reduction of the site boundary for the CNLS does not affect the GE Healthcare RoA/HIRE.

In 2011, GE Healthcare undertook a RoA/HIRE (reference 3) that identified and assessed all the hazards on site with the potential to cause a radiation accident. The RoA concludes that the most severe reasonably foreseeable radiation accident which could lead to an off-site radiological exposure arises from a fire that engulfs a whole building or fire compartmented area leading to a loss of plant and building containment. The operator based the assessment

on radioactive materials inventories as held at the site on the 1st January 2011, which have not increased since this date.

In 2014, in accordance with REPIR regulation 5, GE Healthcare undertook a reassessment of their RoA/HIRE and produced a report (reference 4), using the same dose modelling as the 2011 assessment, with revised quantities of radionuclides to the maximum permissible levels allowed within each building, these being greater than the values used in the 2011 report.

The dose modelling used (reference 13) considers four principle pathways of dose uptake:

- Internal dose from inhalation of the passing plume at the site boundary;
- External dose from standing immersed in the passing plume at the site boundary;
- External dose from ground deposited nuclides for one year after plume passage; and
- Ingestion dose from consumption of contaminated foods for one year after the accident.

The GE Healthcare 2011 and 2014 reports of assessment (reference 3 and 4) conclude that maximum public doses that could result from a fire engulfing their waste storage facility are 1.3 mSv and 3.9 mSv respectively. Both reports therefore conclude, for all the reasonably foreseeable accidents at the CNLS, the effective dose to the public will be below the dose criteria set within Schedule 1 of REPIR.

The RoA also discusses high consequence, low frequency events including, extreme weather, seismic events and flooding. These events are either assessed as being bounded by waste fire described above or to be beyond those that are considered to be reasonably foreseeable.

GE Healthcare concluded that *'there is no potential reasonably foreseeable radiation emergency arising from operations at the CNLS.*

5.2 ONR TECHNICAL ASSESSMENT OF THE GE HEALTHCARE RoA/HIRE

ONR undertook a detailed technical assessment (reference 12) of the GE Healthcare RoA, during the course of which ONR sought clarification of the information provided and further information regarding some elements of how doses to the public were estimated. ONR's assessment focused on the adequacy of the GE Healthcare submission and the technical basis for any emergency planning area.

REPIR and ONR guidance (references 5 and 6) specify that best-estimate analysis should be used by operators to calculate off-site dose consequences and that "evidence should be presented that unwarranted conservatism is not being used". Some conservatism may be used in the calculation of off-site dose figures, for example to simplify analysis, but unwarranted conservatism can give rise to a disproportionately extensive emergency plan. Therefore, careful consideration has been given as to whether analysis undertaken by CNLS is appropriate to support the conclusions of the RoA/HIRE and that there are no faults that are likely to lead to a reasonably foreseeable radiation emergency as defined in REPIR.

ONR's technical assessment of the CNLS RoA (reference 12) concurs with GE Healthcare view that the most significant reasonably foreseeable fault is from a fire that engulfs a whole building or fire compartmented area leading to a loss of plant and building containment.

ONR's technical assessment considered the maximum permissible inventories for each building as detailed in the 2014 report (reference 4) and was satisfied with the GE Healthcare dose modelling methodology (reference 13) used to calculate the effective doses to the public.

The GE Healthcare report made claims on the waste storage drum release rates (1% for a 500 litre drum and 10% for a 200 litre drum) that the ONR assessment judged to be conservative as the materials may be released more readily in a fire event. The ONR assessment considered other mitigating factors from the GE Healthcare submission, in

particular the physical state in which the material would be released in the event of a fire. In the event of a fire the tritiated water would be released as tritiated water vapour and carbon-14 would be released as a carbon dioxide or carbon monoxide. In the event of a fire, the change of the material in the storage drums to tritiated water vapour, carbon dioxide or monoxide would reduce the effective dose uptake to the public by a factor of 14.2, 1000 and 3000 respectively below that claimed within the GE Healthcare report (reference 4).

The ONR assessment concludes that even if the drum release rates were set to 100% (100% contents release), if the physical release state of the material is considered, the overall effective dose to the public will not exceed the dose criteria in Schedule 1 of REPPiR.

ONR's technical assessment therefore effectively concludes that there are no apparent cliff-edge effects in the relevant fault sequences that could undermine the validity of GE Healthcare's assessment. Although GE Healthcare's RoA does not address possible security initiated events, the doses to the public assessed by ONR consider a release of 100% of the radioactive contents of a building.

The ONR technical assessment concludes that it is '*..satisfied that the Operator's declaration made in accordance with Regulation 5(2) and 6(3) and its conclusion that the radioactive substance inventories held at its Cardiff site are not capable of causing a radiation emergency as defined in Regulation 2, have been adequately justified*'.

That being so, some aspects of REPPiR, principally REPPiR regulations 7(1), 9(1) and 16(1), relating to the operator's emergency plan and the identification of off-site planning and prior information areas, do not apply.

As a result of the absence of the need for a local authority off-site emergency plan under REPPiR, Step B of ONR's determination process (relating to the application of other practical and strategic factors to a planning area) is not required.

6 OFF-SITE EMERGENCY ARRANGEMENTS

Although a radiation emergency is not reasonably foreseeable, the radioactive inventory of CNLS continues to exceed the specified quantities set out in REPPiR Schedule 2. Consequently, under REPPiR regulations 5(1) and 5(2), the licensee continues to be required to review their HIRE and submit a RoA periodically or following a material change in the work with ionising radiation. Whilst not anticipated, should such a re-submission suggest any material increase in the risk profile of the site, ONR will make a further re-determination to consider whether further measures under REPPiR to protect the public in the event of a reasonably foreseeable radiation emergency would be justified.

Notwithstanding that there is not a direct requirement under REPPiR for an operators plan, or for the provision of prior information by the operator in respect of the GE Healthcare CNLS, the operator will continue to have relevant legal duties under other legislation that are not directly affected by this determination.

Nuclear licensees have general duties to ensure, so far as is reasonably practicable, the safety and welfare of employees and other persons; to make and implement adequate arrangements for dealing with any accident or emergency (under standard licence condition 11 attached to the nuclear site licence); to take all reasonable steps to prevent any identified radiation accident and limit the consequences of an such radiation accident which does occur under REPPiR; and to prepare contingency plans under the Ionising Radiation Regulations 1999 as appropriate.

ONR, where relevant, will continue to deliver regulatory oversight of the other legal duties as they apply to CNLS as owned by GE Healthcare Ltd.

7 CONCLUSIONS

This report describes ONR's assessment of the operator's RoA/HIRE for the GE Healthcare CNLS and the consequential requirements (or otherwise) for REPPIR off-site emergency planning and prior information areas.

The conclusions of this report are that:

- ONR is satisfied that the technical submission made by GE Healthcare demonstrates that members of the public are not likely to be exposed to effective doses at or in excess of 5 mSv in the year following a reasonably foreseeable radiation accident (or other relevant dose criteria in Schedule 1 of REPPIR);
- There continues to be no requirement under REPPIR regulations 7(1), 9(1) and 16(1) for an operator's emergency plan, the identification of off-site planning and prior information areas by ONR, the preparation of a local authority off-site emergency plan, or for the provision by the operator of prior information to the public in respect of the CNLS.

8 RECOMMENDATIONS

As a result of the conclusions of this report, it is recommended that ONR write to:

- Cardiff City Council and GE Healthcare to notify them that, as a result of ONR's recent assessment, there remains no requirement for a REPPIR off-site emergency planning area or a prior information area for the CNLS.

ONR will continue to seek assurance that the operator continues to make adequate provisions and maintains emergency arrangements for the CNLS. These include the emergency and contingency related legal requirements of the Health and Safety at Work Act etc., REPPIR, the Nuclear Installations Act and the Ionising Radiations Regulations 1999.

9 REFERENCES

1. The Energy Act 2013, Chapter 32.
Part 3, Chapter 1, 'The ONR purposes', paragraph 68(1).
Part 3, Chapter 4, 'Function of the ONR', paragraph 78, 'Principal function'.
The Stationery Office. December 2013. IBN 978-0-10-543213-5
2. Radiation (Emergency Preparedness and Public Information) Regulations 2001
3. GE Healthcare Maynard Centre (Cardiff): Report of identification and assessment of potential radiation emergencies as required by the Radiation (Emergency Preparedness and Public Information) Regulations 2001. 2011 submission for the Maynard Centre. Report Ref: HPSTN 11/05 issue 2
4. GE Healthcare Maynard Centre (Cardiff): Off-site accident dose in support of REPIIR for future nuclear licensed site at Cardiff 2014. Report Ref: HPSTN 14/08 Issue 2, June 2014.
5. A guide to the Radiation (Emergency Preparedness and Public Information) Regulations 2001. L126. 2002. <http://www.gov.uk/pubns/priced/l126.pdf>
6. The technical assessment of REPIIR submissions and the determination of detailed emergency planning zones, ONR NS-TAST-GD-082 Revision 2 2013. www.onr.org.uk/depz-onr-principles
7. Koichi Tanigawa et al. Loss of life after evacuation: lessons learned from the Fukushima accident. Lancet: Volume 379 Issue 9819 889-891, 10 March 2012
8. Council Directive 96/29 Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionising radiation. Official Journal of the European Communities (1996) 39, No L159, 1-114 ISBN 0 11 915263 0
9. ONR Safety Assessment Principles for Nuclear Facilities, 2014 Edition, Revision 0. AM.1 Accident management and emergency preparedness.
10. IAEA Safety Standards Series (General Safety Requirements) No GS-R-2 dated November 2002. Preparedness and Response for a Nuclear or Radiological Emergency. ISBN 92-0-116702-4 http://www.pub.iaea.org/MTCD/publications/PDF/Pub1133_scr.pdf
11. IAEA Safety Standards – Safety Guide No GS-G-2.1 2007. Arrangements for Preparedness for a Nuclear or Radiological Emergency. ISBN 92-0-109306 3. http://www-pub.iaea.org/mtcd/publications/pdf/pub1265_web.pdf
12. GE Healthcare – Maynard Centre (Cardiff) - ONR-COP-AR-15-003 – Radiation Protection Assessment of GE Healthcare (Maynard Centre – Cardiff) 'no change' Declaration made by it under Regulation 5(2) of the Radiation (Emergency Preparedness and Public Information) Regulations 2001 – December 2015.
13. GE Healthcare: Methodology for REPIIR assessments including food ingestion doses. Doc Ref: HPSTN 04/02