



Department for
Business, Energy
& Industrial Strategy



Ministry
of Defence



REVISED REQUIREMENTS FOR RADIOLOGICAL PROTECTION:

Emergency preparedness and response

October 2017

REVISED REQUIREMENTS FOR RADIOLOGICAL PROTECTION: Emergency preparedness and response

The consultation and Impact Assessment can be found on the BEIS section of GOV.UK:
<https://www.gov.uk/government/consultations/revised-requirements-for-radiological-protection-emergency-preparedness-and-response>

**revised requirements
for radiological
protection: (2013/59/EURATOM)**

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psi@nationalarchives.gsi.gov.uk.

Any enquiries regarding this publication should be sent to us at ep&rconsultation@beis.gov.uk.

Foreword

I am pleased to present policy proposals on strengthening further Great Britain's emergency preparedness and response arrangements for radiological emergencies. The UK has benefited from more than 60 years of clean and safe nuclear-generated electricity. All of our civil and defence nuclear and radiological sites and the transport of radioactive material are independently regulated to ensure they are safe, secure and environmentally sound. These proposals will implement the emergency preparedness and response elements of the Euratom Basic Safety Standards Directive 2013 which adopts the learning following the Fukushima Daiichi accident.



Even though the UK will be leaving the EU and the Euratom Treaty, the government remains wholly committed to the highest standards in radiological safety – including emergency preparedness. We will be making changes to domestic legislation to ensure it will apply whatever our future relationship with Euratom. The UK will remain a strong and active member of the International Atomic Energy Agency (IAEA), as it has been since 1957. We have been mindful of their recent emergency preparedness standards in developing the regulatory changes on which we are consulting.

Thousands of businesses in Great Britain work with radioactive materials to generate electricity, as pharmaceutical products, for food sterilisation. My department is committed to the safe and successful future for our nuclear and radiological sector. The risks of an emergency in the nuclear and radiological sectors continue to remain extremely low – we have rigorous safety standards which the Office for Nuclear Regulation and the Health and Safety Executive oversee and enforce.

This consultation proposes broad structural changes to how emergency preparedness and response is done in Great Britain; the most significant of these are intended to ensure that our emergency management systems are sufficiently flexible to respond to very low probability events and events that develop in unexpected ways. This is not new, but will act to formalise the local voluntary initiatives that have already been undertaken to strengthen planning for more severe radiological emergencies.

We are grateful to stakeholders for their ongoing support in achieving this outcome, and for their contribution to the work of delivering the highest standards of emergency preparedness and response. This consultation is issued jointly with the Health and Safety Executive and the Ministry of Defence.

Richard Harrington

The Rt Hon Richard Harrington MP

Minister for Energy and Industry

Department for Business, Energy and Industrial Strategy

Contents

Foreword.....	2
General information.....	6
Purpose of this consultation.....	6
Executive summary.....	8
Crynodeb gweithredol.....	10
Catalogue of consultation questions.....	13
Background.....	15
The consultation.....	17
Chapter 1 – At nuclear and radiological sites.....	19
Article 4 – definition of an Emergency.....	20
Articles 4 and 17 – definition of Emergency Worker and prior information and training.....	21
Article 7 – reference levels.....	23
Article 69 – emergency response.....	24
Article 70 – provision of information to public likely to be affected.....	28
Article 71 – provision of information to public actually affected.....	29
Article 97 – emergency management system.....	30
Article 98 – emergency preparedness.....	39
Article 105 – enforcement.....	43
Other amendments to REPIIR.....	43
Chapter 2 – Transport of radioactive materials.....	44
Article 4 – definition of an Emergency.....	45
Articles 4 and 17 – definition of Emergency Worker and prior information and training.....	46
Article 7 – Reference levels.....	47
Article 69 – emergency response.....	47
Article 70 – provision of information to public likely to be affected.....	51
Article 97 – emergency management system.....	52
Article 98 – emergency preparedness.....	55
Article 105 – enforcement.....	57
Transport and the graded approach.....	57
Annex: How this could work in practice.....	59
Whether the new regulations apply.....	59

Detailed planning	60
Outline planning	61
Commensurate, outcome-focused planning	62
The distribution and use of stable iodine in emergency planning zones	63
Glossary	66
Key acronyms, legislative frameworks and documents	66

General information

Purpose of this consultation

To inform stakeholders and the public of the government's proposals for implementing the emergency preparedness and response elements of the Basic Safety Standards Directive 2013 and to seek their views

Issued: 5 October 2017

Respond by: 15 November 2017

Enquiries to:

Nuclear Resilience Team
Department for Business, Energy & Industrial Strategy,
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London, SW1H 0ET
Tel: 020 7215 5000
Email: ep&rconsultation@beis.gov.uk

Consultation reference: revised requirements for radiological protection: emergency preparedness and response

Territorial extent:

Great Britain. Northern Ireland will be running a separate consultation.

This consultation is relevant to those working with radioactive materials, in particular where an emergency as a result of that work with radioactive material has an impact on the public. Emergency planners working in local authorities will also have an interest in the topics on which we are consulting.

How to respond

Your response will be most useful if it is framed in direct response to the questions posed, though further comments and evidence are also welcome.

This consultation is being made available on the GOV.UK website. Responses can be returned by email (preferable) or post. In order to help us analyse responses, please provide details of your organisation.

Please send your comments on the proposals in this paper and on the accompanying draft impact assessment to the following address:

Send your comments by email to: ep&rconsultation@beis.gov.uk

Or by post to:
Nuclear Resilience Team
Department for Business, Energy & Industrial Strategy,
1 Victoria Street

Respondents in Scotland should also send their response to:

Send your comments by email to: Ewan.Young@gov.scot

Or by post to:

Ewan Young
Environmental Quality Division
Scottish Government, Area 3H South
Victoria Quay
Edinburgh, EH6 6QQ

Respondents in Wales should also send their response to:

Send your comments by email to: EQR@gov.wales

Or by post to:

Environment and Quality Regulation
Welsh Government, Crown Buildings
Cathays Park
Cardiff, CF10 3NQ

Additional copies:

You may make copies of this document without seeking permission. An electronic version can be found at <https://www.gov.uk/government/consultations/revised-requirements-for-radiological-protection-emergency-preparedness-and-response>.

Confidentiality and data protection

Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information legislation (primarily the Freedom of Information Act 2000, the Data Protection Act 1998 and the Environmental Information Regulations 2004).

If you want information that you provide to be treated as confidential please say so clearly in writing when you send your response to the consultation. It would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded by us as a confidentiality request.

We will summarise all responses and place this summary on the [GOV.UK website](https://www.gov.uk). This summary will include a list of names or organisations that responded but not people's personal names, addresses or other contact details.

Quality assurance

This consultation has been carried out in accordance with the [government's Consultation Principles](#).

If you have any complaints about the consultation process (as opposed to comments about the issues which are the subject of the consultation) please address them to:

Email: enquiries@beis.gov.uk

Executive summary

The government welcomes the emergency preparedness elements in the Euratom Basic Safety Standards Directive 2013 (BSSD 2013) which reflects important lessons learned from the Fukushima Daiichi accident, as well as the recent standards agreed at the International Atomic Energy Agency (IAEA) and International Commission on Radiological Protection (ICRP).

The BSSD 2013¹ updates the 1996 BSSD. It simplifies existing Euratom provisions for protection against harmful effects of ionising radiation, and consolidates those provisions in line with the latest international standards.

The UK is committed to the highest standards in defence and civil nuclear and radiological safety – including standards for emergency preparedness and response. The UK's decision to leave the European Union (EU) and Euratom will not affect that position. The UK's independent regulators, the Health and Safety Executive (HSE) and the Office for Nuclear Regulation (ONR), are respected globally and our regulatory framework is often adopted by others internationally as well as being subject to international peer review. In many regards, the UK already meets or exceeds the requirements of the BSSD 2013.

The risk of a radiological emergency in the UK is extremely low. A stringent safety regime ensures that the probability and impact of accidents is kept as low as possible. Nonetheless, as an extra layer of public protection, dutyholders are required by law to plan appropriately for emergencies and ONR and HSE ensure this is complied with.

We have consulted in depth in reaching the positions set out in this consultation with expert stakeholders, the European Commission and the IAEA. Our proposed approach to transposition of the BSSD 2013 is to build on our robust and well-established regulatory regime and strengthen it further by making it more responsive to local conditions, more proportionate and more transparent. Arrangements for protecting the public, environment and property and ensuring proportionate and prompt action to mitigate an emergency, irrespective of the cause or consequence, will be enhanced through these changes.

The key principles we are strengthening as a result of BSSD 2013 are:

Outcome-focused planning: The government wants planning efforts to be focused on where the impacts of an emergency are most likely to be felt, the impacts are most severe, or where the potential benefit is greatest. In practice this would mean targeted planning for places where emergency plans are harder to implement or example, schools, hospitals. We propose to make emergency preparedness and response planning outcome-focused, so dutyholders will be empowered to demonstrate to the regulator how they intend to meet the requirements of the regulations in light of local conditions, rather than making them comply with prescriptive, one-size-fits-all requirements that do not take account of the particular features of a site. This will align our emergency preparedness and response framework more closely with how we now regulate nuclear safety and security more generally and with wider health and safety regulation.

Commensurate planning: The Directive requires proportionate and flexible plans that can deal with the impact of a wide range of emergencies. This means the civil and defence nuclear and radiological sectors must plan proportionately for the full range of emergencies; the more severe or likely an emergency, the more detail plans should go into. This means that some planning should be undertaken for events of very low probability (with a severe impact) and events not considered in the design of the site or package. For some practices and sites, this may mean

¹ <https://ec.europa.eu/energy/sites/ener/files/documents/CELEX-32013L0059-EN-TXT.pdf>

planning over larger distances than at present, as well as introducing plans for those practices and sites which currently do not have specific emergency preparedness arrangements associated with their site.

A graded approach: The government proposes maintaining a regulatory framework that will continue to apply to all nuclear and radiological activities, including transport. However, we intend to introduce a graded approach so that the most comprehensive emergency preparedness and response requirements are targeted at the most hazardous activities. The government would expect sites that currently have off-site plans in place to continue to be required to have them under the new regime.

Transparency and consistency: Using complex threshold calculations to decide whether and what planning should be undertaken has meant our emergency management system can sometimes appear arbitrary and technical to stakeholders. The government intends to move away from this approach, ensuring that all planning decisions can be justified on the basis of proportionate planning. In addition, we are also proposing to standardise key elements of the methodology that informs planning distances and countermeasures. This will ensure that local authorities have better and consistent information on the consequences of an emergency and that they are empowered as owners of the off-site plan. In practice we hope this will make demonstrating to the public how the details of off-site planning are determined significantly more straightforward.

Flexibility: The government also intends to provide for greater flexibility in how we plan for and respond to a nuclear or radiological emergency, so that local emergency planners can make pragmatic and effective decisions. For example, we want to ensure that stable iodine tablets, a pharmacy medicine which is an important countermeasure for certain emergencies, can be readily distributed in a timely manner to affected populations by removing regulatory obstacles to their doing so.

Continuous improvement: The new regulations will be supported by a Code of Practice which will offer practical guidance on how dutyholders can meet the requirements of the regulations. Our intention is that this guidance will be regularly updated so that we can incorporate, where appropriate, national and international good practice (particularly from the IAEA) and lessons learned from testing and exercising, without making changes to the underlying regulatory regime.

The UK has benefited from more than 60 years of clean and safe nuclear-generated electricity. All of our nuclear and radiological sites and the transport of nuclear and radioactive material are stringently regulated to ensure they are safe, secure and environmentally sound.

We are committed to maintaining public confidence in current and future generations of nuclear plant to provide clean safe energy and the continued production, use and transport of nuclear and radioactive material for industrial or medical purposes to those who need it – strong emergency preparedness and response arrangements are a key part of this. Implementing the BSSD 2013 and broader international good practice enhances the credibility of the nuclear industry and maintains the UK's strong position as a leading nuclear nation.

Although the Euratom Treaty does not apply to Defence activities, the Ministry of Defence (MOD) has taken a policy decision to apply the BSSD 2013 to Defence activities. In general, the MOD is bound by health, safety and environmental protection requirements; however, in certain circumstances, exemptions may apply. This will ensure a consistent approach to the UK's emergency preparedness and response arrangements across civil nuclear, non-nuclear and Defence sites.

These changes are in no way in response to a change in the UK's assessment of the risk of a nuclear or radiological emergency, but deliver on our commitment to continuous improvement.

Crynodeb gweithredol

Mae'r llywodraeth yn croesawu'r elfennau ynglŷn â pharodrwydd yng Nghyfarwyddeb Safonau Diogelwch Sylfaenol Euratom 2013 (BSSD 2013) sy'n cydgrynhoi gwersi pwysig a ddysgwyd o ddamwain Fukushima Daiichi, yn ogystal ag adlewyrchu'r safonau y cytunwyd arnynt yn ddiweddar yn yr Asiantaeth Ynni Atomig Rhyngwladol (IAEA) a'r Comisiwn Rhyngwladol ar Ddiogelu Ymbelydrol (ICRP).

Mae BSSD 2013^[1] yn diweddarau BSSD 1996. Mae'n symleiddio darpariaethau presennol Euratom ar gyfer diogelu yn erbyn effeithiau andwyol ymbelydredd ïoneiddio, ac yn cydgyfnerthu'r darpariaethau hynny yn unol â'r safonau rhyngwladol diweddaraf.

Mae'r Deyrnas Unedig wedi ymrwymo i'r safonau uchaf mewn diogelwch niwclear ac ymbelydrol mewn amddiffyn ac yn y byd sifil – gan gynnwys safonau ar gyfer parodrwydd ac ymateb mewn argyfwng. Ni fydd penderfyniad y Deyrnas Unedig i ymadael â'r Undeb Ewropeaidd (UE) ac Euratom yn effeithio ar y safbwynt hwn. Mae rheoleiddwyr annibynnol y Deyrnas Unedig, sef yr Awdurdod Gweithredol Iechyd a Diogelwch (HSE) a'r Swyddfa dros Reoli Niwclear (ONR), yn cael eu parchu ledled y byd ac mae'n fframwaith rheoleiddio ni yn aml yn cael ei fabwysiadu gan eraill yn rhyngwladol yn ogystal â chael ei adolygu gan gymheiriaid rhyngwladol. Ar lawer ystyr, mae'r Deyrnas Unedig eisoes yn bodloni neu'n gwneud mwy na'r gofynion yn BSSD 2013.

Eithriadol o isel yw'r risg o argyfwng ymbelydrol yn y Deyrnas Unedig. Mae cyfundrefn ddiogelwch lem yn sicrhau bod y tebygrwydd y ceir damweiniau ac effaith damweiniau yn cael eu cadw mor isel ag y bo modd. Er hynny, fel haen ychwanegol o amddiffyniad i'r cyhoedd, mae'r gyfraith yn gofyn i'r rhai sydd o dan ddyletswydd gynllunio'n briodol ar gyfer argyfwng ac mae'r ONR a'r HSE yn sicrhau eu bod yn cydymffurfio â'r gofyniad.

Rydym wedi ymgynghori'n fanwl wrth ddod i'r safbwyntiau a geir yn yr ymgynghoriad hwn gyda rhanddeiliaid arbenigol, y Comisiwn Ewropeaidd a'r IAEA. Ein ffordd arfaethedig ni o drawsosod BSSD 2013 yw adeiladu ar ein cyfundrefn reoleiddio gadarn sydd eisoes wedi ennill ei phlwyf a'i chryfhau ymhellach drwy ei gwneud yn fwy ymatebol i'r amodau lleol, yn fwy cymesur ac yn fwy tryloyw. Bydd trefniadau ar gyfer amddiffyn y cyhoedd, yr amgylchedd ac eiddo a sicrhau camau cymesur a chyflym i liniaru ar argyfwng, ni waeth beth fo'r achos neu'r canlyniad, yn cael eu gwella drwy'r newidiadau hyn.

Dyma'r egwyddorion allweddol yr ydym yn eu cryfhau o ganlyniad i BSSD 2013:

Cynllunio sy'n canolbwyntio ar ddeilliannau: Mae'r llywodraeth yn awyddus i'r ymdrechion wrth gynllunio gael eu canolbwyntio ar y manau lle mae effeithiau argyfwng debycaf o gael eu teimlo, lle mae'r effeithiau'n fwyaf difrifol, neu lle mae'r manteision posibl ar eu mwyaf. Yn ymarferol, byddai hyn yn golygu cynlluniau wedi'u targedu ar fannau lle mae'n anos rhoi cynlluniau brys ar waith e.e. ysgolion, ysbytai. Rydym yn bwriadu sicrhau bod cynlluniau ynglŷn â pharodrwydd ac ymateb mewn argyfwng yn cael eu seilio ar ddeilliannau, fel y bo'r rhai sydd o dan ddyletswydd yn cael eu grymuso i ddangos i'r rheoleiddiwr sut maen nhw'n bwriadu ateb gofynion y rheoliadau yng ngoleuni'r amodau lleol, yn hytrach na gwneud iddyn nhw gydymffurfio â gofynion gorfodol, neu un ateb sy'n addas i bawb nad yw'n ystyried nodweddion penodol y safle. Bydd hyn yn cysoni'n fframwaith parodrwydd ac ymateb mewn argyfwng yn nes at ein modd presennol o reoleiddio diogelwch niwclear yn fwy cyffredinol ac â'r gwaith rheoleiddio ehangach mewn iechyd a diogelwch.

Cynllunio cymesur: Mae'r Gyfarwyddeb yn gofyn am gynlluniau cymesur a hyblyg sy'n gallu ymdrin ag effaith ystod eang o argyfyngau niwclear. Mae hyn yn golygu bod rhaid i'r sectorau

^[1] <https://ec.europa.eu/energy/sites/ener/files/documents/CELEX-32013L0059-EN-TXT.pdf>

niwclear a radiolegol mewn amddiffyn ac yn y byd sifil gynllunio mewn modd cymesur ar gyfer yr ystod lawn o argyfyngau; mwyaf dwys neu debyg y bo'r argyfwng, mwyaf o fanylder a ddylai gael ei weld yn y cynllun. Mae hyn yn golygu y dylai rhywfaint o waith cynllunio gael ei wneud ar gyfer digwyddiadau pur annhebygol (sydd ag effaith ddifrifol) a digwyddiadau sydd heb eu hystyried wrth i'r safle neu'r pecyn gael eu cynllunio. I rai arferion a safleoedd, gallai hyn olygu cynllunio dros bellter ehangach nag ar hyn o bryd, yn ogystal â chyflwyno cynlluniau i'r holl arferion a safleoedd hynny sydd heb drefniadau penodol ar hyn o bryd ynglŷn â pharodrwydd at argyfyngau.

Dull graddedig: Mae'r llywodraeth yn bwriadu cadw fframwaith rheoleiddio a fydd yn dal yn gymwys i bob gweithgaredd niwclear ac ymbelydrol, gan gynnwys cludiant. Er hynny, rydym yn bwriadu cyflwyno dull graddedig fel bod y gofynion mwyaf cynhwysfawr ynglŷn â pharodrwydd ac ymateb mewn argyfwng yn cael eu targedu ar y gweithgareddau mwyaf peryglus. Byddai'r llywodraeth yn disgwyl i safleoedd sydd â chynlluniau odid ar y safle ar hyn o bryd barhau i orfod cadw'r rhain o dan y gyfundrefn newydd.

Tryloywder a chysondeb: Mae defnyddio cyfrifiadau cymhleth ynglŷn â throthwyon i benderfynu a oes modd cynllunio a pha waith cynllunio a ddylai gael ei wneud yn golygu bod ein system rheoli argyfwng yn ymddangos weithiau i'r rhanddeiliaid fel petai'n fymrwyl a thechnegol. Mae'r llywodraeth yn bwriadu symud i ffwrdd o'r dull hwn, gan sicrhau bod modd i bob penderfyniad cynllunio gael ei wneud ar sail cynllunio cymesur. Hefyd, rydym yn bwriadu safoni elfennau allweddol yn y fethodoleg sy'n llywio pellterau cynllunio a gwrthfesu. Bydd hyn yn sicrhau bod gan yr awdurdodau lleol wybodaeth well a mwy cyson am ganlyniadau argyfwng a'u bod wedi'u grymuso fel perchnogion y cynllun oddi ar y safle. Yn ymarferol gobeithio y bydd hyn yn ei gwneud gryn dipyn yn haws dangos i'r cyhoedd sut mae manylion cynlluniau oddi ar y safle yn cael eu penderfynu.

Hyblygrwydd: Mae'r llywodraeth hefyd yn bwriadu darparu ar gyfer mwy o hyblygrwydd o ran sut rydyn ni'n cynllunio ar gyfer argyfwng niwclear neu ymbelydrol ac yn ymateb iddo, er mwyn i gynllunwyr argyfwng lleol wneud penderfyniadau pragmatig ac effeithiol. Er enghraifft, rydym am sicrhau bod modd i dabledi iodin sefydlog, sef meddyginiaeth o fferyllfeydd sy'n wrthfesu pwysig mewn argyfyngau penodol, gael eu dosbarthu'n brydlon i boblogaethau yr effeithir arnyn nhw drwy ddileu rhwystrau rheoleiddiol sy'n eu hatal.

Gwella'n barhaus: Caiff y rheoliadau newydd eu hategu gan God Ymarfer a fydd yn cynnig canllawiau ymarferol ar sut y gall y rhai sydd o dan ddyletswydd ateb gofynion y rheoliadau. Rydym yn bwriadu i'r canllawiau gael eu diweddu'n rheolaidd er mwyn inni ymgorffori, lle bo'n briodol, arferion da cenedlaethol a rhyngwladol (yn enwedig o du'r IAEA) a gwersi a ddysgir drwy brofion ac ymarferion, heb wneud newidiadau yn y gyfundrefn reoleiddio sylfaenol.

Mae'r Deyrnas Unedig ar ei hennill yn sgil mwy na 60 mlynedd o drydan niwclear sydd wedi'i gynhyrchu'n lân ac yn ddiogel. Mae pob un o'n safleoedd niwclear ac ymbelydrol a chludiant ein deunydd niwclear ac ymbelydrol yn cael eu rheoleiddio'n llym i sicrhau eu bod yn ddiogel ac yn gadarn o ran yr amgylchedd.

Rydym wedi ymrwymo i gynnal hyder y cyhoedd yn y genhedlaeth bresennol a'r genhedlaeth newydd o safleoedd niwclear i ddarparu ynni glân a diogel a'u hyder mewn parhau i gynhyrchu, defnyddio a chludo deunydd ymbelydrol at ddibenion diwydiannol neu feddygol i'r rhai y mae arnynt ei angen – mae trefniadau cryf ynglŷn â pharodrwydd ac ymateb mewn argyfwng yn rhan allweddol o hyn. Mae gweithredu BSSD 2013 ac arferion da rhyngwladol ehangach yn gwella hygredd y diwydiant niwclear ac yn cynnal safle cryf y Deyrnas Unedig fel un o'r prif wledydd niwclear.

Er nad yw Cytuniad Euratom yn gymwys i weithgareddau Amddiffyn, mae'r Weinyddiaeth Amddiffyn (MOD) wedi gwneud penderfyniad polisi i gymhwyso BSSD 2013 at weithgareddau Amddiffyn. At ei gilydd, mae'r MOD yn cael ei rhwymo gan ofynion iechyd a diogelwch a gofynion amgylcheddol; ond, o dan amgylchiadau penodol gall esemptiadau fod yn gymwys. Bydd hyn yn

sicrhau ymagwedd gyson at barodrwydd ac ymateb y Deyrnas Unedig mewn argyfwng ar draws pob safle niwclear sifil, pob safle an-niwclear a phob safle Amddiffyn.

Nid yw'r newidiadau hyn yn codi mewn ymateb i unrhyw newid yn asesiad y Deyrnas Unedig o'r risg o argyfwng niwclear neu ymbelydrol, ond yn hytrach yn cyflawni ein hymrwymiad i wella'n barhaus.

Catalogue of consultation questions

Impact Assessment

- | | |
|----|---|
| 1. | <p>The following questions relate to some of the cost estimates in the Impact Assessment that accompanies this consultation document:</p> <p>Are you able to provide further information about current costs associated with radiological and nuclear emergency preparedness? In particular the costs of risk assessment, planning, costs of countermeasures and communicating to the public?</p> <p>Are you able to provide further information about future costs associated with radiological and nuclear emergency preparedness? In particular, information about the numbers of sites in scope of Option 1 or 2 and the costs of outline planning?</p> <p>Do you have any other comments on the assumptions or the cost estimates in the Impact Assessment? If yes, please provide further detail.</p> |
|----|---|

REPPIR (Chapter 1 – Emergency Preparedness and Response at Radiological Sites)

- | | |
|----|--|
| 2. | <p>With regards to the transposition of the definitions of Emergency and Emergency Worker and the concept of reference levels into GB law, do you have any views or suggested improvements? If yes, please provide further detail.</p> |
| 3. | <p>In relation to transposition of Article 97(2):</p> <p>Do you have any information about, or views on, the impact of the proposed changes?</p> <p>Are there any opportunities, as part of this modification of planning arrangements, to make detailed planning around sites less burdensome to operators or local authorities (while maintaining the standards of public protection)?</p> <p>If yes, please provide further detail.</p> |
| 4. | <p>Do you have views on the proposal to require coordinated planning between multiple dutyholders (where they are in close proximity)?</p> <p>If yes, in particular, please share your suggestions for how this could work in practice.</p> |
| 5. | <p>Do you have views on how the HIRE process could be made more consistent and transparent (Article 98.1)? If yes, please provide further detail.</p> |

6.

Do you have any views or suggested improvements on the proposed amendments to testing arrangements (Article 98.4)? If yes, please provide further detail.

CDG (Chapter 2 – Transport and the Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (CDG 2009))

7.

With regard to the proposed amendments to the CDG and accompanying Regulatory Triage Assessment, do you have any views or suggested improvements? If so, please use evidence to support your answer.

Background

Current legal framework

1. The UK's current legislative framework in relation to planning for nuclear and radiological emergencies or accidents includes the Radiation (Emergency Preparedness and Public Information) Regulations 2001²(REPPIR), as well as the Ionising Radiations Regulations 1999³ (IRRs), and the Civil Contingencies Act 2004 (CCA)⁴ – for Scotland this is the Civil Contingencies Act 2004 (Contingency Planning) (Scotland) Regulations 2005⁵.
2. The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009⁶ (CDGs) are the main regulations governing the safe transport of radioactive materials in Great Britain, and include provisions in relation to planning for nuclear or radiological emergencies or accidents that occur during such transport.
3. REPPIR and the CDGs apply throughout Great Britain, but do not apply in Northern Ireland. Northern Ireland has its own version of REPPIR and the CDGs – The Radiation (Emergency Preparedness and Public Information) Regulations (Northern Ireland) 2001⁷ and The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (Northern Ireland) 2010⁸. Therefore the proposals in this consultation will apply only to Great Britain.
4. The function of protecting the public from radiation is reserved, so Public Health England (PHE) (formerly the (UK) Health Protection Agency (HPA)) is the national agency for dealing with the health effects of radiation for all of the UK.

The Basic Safety Standards Directive 2013

5. The BSSD 2013 lays down minimum radiation safety standards for three different exposure groups: medical patients, workers and members of the public. The requirements cover planned exposure situations (for example, nuclear medicine, nuclear power and other industrial activities that use radioactivity) as well as existing exposure situations (for example, the management of legacy radioactive contaminated land). The Directive also covers arrangements for responding to emergency exposure situations, ranging from accidents involving small individual sources to major nuclear emergencies, incorporating the lessons learned from the Fukushima nuclear accident.
6. While the UK remains a member of the EU and of Euratom, we are legally obliged to implement Directives and respect the laws and obligations required by that membership. The UK government's approach to EU Directives post EU referendum is therefore that the UK should continue to negotiate, implement and apply EU legislation to the timelines laid down for transposition and maintain such standards thereafter.
7. Although the Euratom Treaty does not apply to Defence activities, the MOD has taken a policy decision to apply the BSSD 2013 to Defence activities. In general MOD is bound by health, safety and environmental protection requirements; however, in certain circumstances, exemptions may apply. Where an exemption or derogation does apply, MOD policy is to produce outcomes that are, so far as reasonably practicable, at least as good as those required by UK legislation.

² http://www.legislation.gov.uk/ukxi/2001/2975/pdfs/ukxi_20012975_en.pdf

³ http://www.legislation.gov.uk/ukxi/1999/3232/pdfs/ukxi_19993232_en.pdf

⁴ http://www.legislation.gov.uk/ukpga/2004/36/pdfs/ukpga_20040036_en.pdf

⁵ http://www.legislation.gov.uk/ssi/2005/494/pdfs/ssi_20050494_en.pdf

⁶ http://www.legislation.gov.uk/ukxi/2009/1348/pdfs/ukxi_20091348_en.pdf

⁷ <http://www.legislation.gov.uk/nisr/2001/436/contents/made>

⁸ http://www.legislation.gov.uk/nisr/2010/160/pdfs/nisr_20100160_en.pdf

Recent developments in nuclear emergency planning

8. Following the Fukushima accident in 2011⁹, the UK government commissioned Dr Mike Weightman, the then HM Chief Inspector of Nuclear Installations, to examine the circumstances of the accident to see what lessons could be learned to enhance the safety of the UK nuclear industry. Dr Weightman confirmed that the UK's nuclear emergency response arrangements were fit for purpose. However, he recommended that the government should instigate reviews (known as extendibility assessments) of the arrangements for extending countermeasures beyond the Detailed Emergency Planning Zone (DEPZ) in the event of more serious emergencies. The government trialled a voluntary approach to extendibility with most assessments completed in 2016. The government also refreshed national guidance; the Nuclear Emergency Planning and Response Guidance 2015¹⁰ (NEPRG) is the primary source of guidance for local planners to enable them to write effective emergency plans. This is published in five documents addressing, in turn, the concept of operations (ConOps), preparedness, response, recovery and annexes.

9. At an international level, the International Atomic Energy Agency (IAEA) updated its benchmarks for emergency preparedness with the General Safety Requirements Part 7 on Preparedness and Response for a Nuclear or Radiological Emergency published in 2015 (GSR7)¹¹. This publication is informed by lessons identified from the Fukushima incident.

10. The UK has ratified and is therefore a Contracting Party to the IAEA's Convention on Nuclear Safety¹² which is intended to commit participating States operating land-based nuclear power plants to maintaining a high level of safety by setting international benchmarks to which States would subscribe. The obligations of the Contracting Parties are based to a large extent on the principles contained in the IAEA Safety Fundamentals¹³ document of which GSR7 forms part. Technical guidance on how GSR7 should work in practice is being developed by the IAEA.

Commensurate outcome-focused regulation

11. As the BSSD 2013 will require a number of changes to be made to the UK's regulatory framework for nuclear and radiological emergency preparedness, an opportunity has arisen to improve these regulations more generally. Best practice regulation of work with ionising radiation or at nuclear sites has been increasingly focused on outcomes, rather than prescriptive processes. REPPIR, in the government's view, is more prescriptive of process and less clear on the outcome dutyholders should be achieving than it could be.

12. A notable example of this is the determination of whether offsite planning should be undertaken at a site and, if so, over what area? The government believes that the new regulations should support the reaching of an agreement (informed by expert advice) between the site operator and the local authority on what commensurate planning should be in place to best deliver public protection. This will mean a small, but significant change for the role of ONR (who will regulate the decision, rather than make a determination) and a move away from the use of trigger doses to determine the extent of planning.

13. The intention is for this, and other changes like it, to shift effort, time and investment away from process-driven calculations and discussions. Instead, the regulator, site operator and local authority should invest more in preparing for the consequences of nuclear and radiological

⁹ On 11 March 2011, a huge tsunami and massive earthquake led to an accident at the Fukushima Daiichi nuclear power plant in Japan. It was the worst accident at a nuclear power plant since the Chernobyl disaster in 1986.

¹⁰ <https://www.gov.uk/government/publications/national-nuclear-emergency-planning-and-response-guidance>

¹¹ <http://www-pub.iaea.org/books/IAEABooks/10905/Preparedness-and-Response-for-a-Nuclear-or-Radiological-Emergency>

¹² <http://www-ns.iaea.org/conventions/nuclear-safety.asp>

¹³ http://www-pub.iaea.org/MTCD/publications/PDF/Pub1273_web.pdf

emergencies. This is an approach that is more in line with international best practice and preparedness for non-nuclear/radiological emergencies.

The consultation

14. This consultation document sets out the options identified by the government for implementing the obligations in the BSSD 2013 that relate to planning for nuclear or radiological emergencies or incidents, and seeks your feedback on these options.

15. Separately, in chapter 2, we set out the options identified by the government for implementing the obligations in the BSSD 2013 that relate to planning for nuclear or radiological emergencies or incidents that occur during the transport of radioactive materials, and seek your feedback on these options.

16. In many regards, the UK already meets or exceeds the requirements of the BSSD 2013. Accordingly, where this consultation document does not identify a need to change the existing legislation, the government's intention would be to maintain or replicate our current legislative provisions.

17. This consultation is accompanied by an Impact Assessment (IA) which explores the proposed changes to REPIR and a Regulatory Triage Assessment (RTA) which covers the proposed changes to the CDGs. In these documents, the government has sought to quantify the impact of changes proposed in this consultation. However, we welcome additional insight and evidence from stakeholders to inform the final versions of these documents.

The following questions relate to some of the cost estimates in the Impact Assessment that accompanies this consultation document:

Are you able to provide further information about current costs associated with radiological and nuclear emergency preparedness? In particular the costs of risk assessment, planning, costs of countermeasures and communicating to the public?

Are you able to provide further information about future costs associated with radiological and nuclear emergency preparedness? In particular, information about the numbers of sites in scope of Option 1 or 2 and the costs of outline planning?

Do you have any other comments on the assumptions or the cost estimates in the Impact Assessment?

Implementation approach

18. As the policies proposed would, if brought forward, require substantial amendments to REPIR, the government is minded to revoke and replace REPIR with new regulations, made using powers under the Energy Act 2013 and the Health and Safety at Work Act 1974. The policies proposed in relation to the transport of nuclear materials, on the other hand, are likely to require relatively minor amendments to the CDGs, so the government is minded to simply amend the CDGs using powers under the Energy Act 2013.

19. REPIR currently has accompanying guidance¹⁴ on how to apply the regulations in practice. The government is firmly of the view that the new regulations that replace REPIR will similarly need accompanying practical guidance as to the requirements of the regulations. Section

¹⁴ <http://www.hse.gov.uk/pubns/priced/l126.pdf>

79 of the Energy Act 2013 provides the ONR with powers to issue such guidance in the form of a Code of Practice (CoP) in relation to the statutory provisions that they are responsible for enforcing. HSE has similar powers under section 16 of the Health and Safety at Work Act 1974 in relation to the statutory provisions that they are responsible for enforcing. The government intends to work closely with the ONR and HSE to ensure that appropriate guidance is available to dutyholders when the new regulations come into force.

20. This consultation document makes reference to the Nuclear Emergency Planning and Response Guidance (2015)(NEPRG). The government expects that some of the content of this Guidance will be absorbed into the ONR's new CoP. Other areas of the NEPRG are outside the scope of the new regulations and so will remain as separate best practice guidance. The government acknowledges that ONR has produced extensive guidance which will need to be updated and could be reflected in the CoP (for example, Safety Assessment Principles, Safety Assessment Principles Technical Assessment Guides). In transposing the BSSD 2013, we have referred to best practice guidance from the IAEA and Nuclear Emergency Arrangements Forum (nuclear operators) and the helpful work done by the Local Authorities Working Group.

21. Though the proposals in this consultation are designed to implement the requirements of BSSD 2013 first and foremost, the government is mindful of the importance of ensuring that the regulatory approach incorporates the most up-to-date thinking and best practice. In particular, we want to ensure that the technical guidance on how GSR7 should work in practice can be reflected in the domestic regime. Where possible, we therefore intend to build into the new regulatory regime sufficient flexibility so as to be able to reflect the new IAEA guidance when it is published.

Chapter 1 – At nuclear and radiological sites

22. The text of the relevant emergency preparedness provisions of the BSSD 2013 that need to be implemented are set out in the blue boxes. This is followed by the government's proposals for transposing the provision. Specific questions on which the government would like views from our stakeholders are boxed and highlighted in bold and summarised in the list of consultation questions on page [12].

23. REPPIR is the primary means through which the nuclear emergency preparedness and response elements of the Basic Safety Standards Directive 1996¹⁵ (1996 BSSD) were transposed into UK law. REPPIR is secondary legislation (as opposed to primary legislation) and a statutory instrument (SI), made under powers in the Health and Safety at Work Act 1974¹⁶ (the 1974 Act) and (in respect of two regulations) section 2(2) of the European Communities Act 1972¹⁷.

24. REPPIR applies both to civil and defence nuclear (i.e. relating to a licensed nuclear installation) and non-nuclear work with ionising radiation (for example, hospitals, research laboratories, industrial sites). In addition, regulation 17 of REPPIR applies to all local authorities and requires them to prepare and supply information and advice relating to radiation emergencies. This regulation applies irrespective of how the emergency arises. Until April 2014, HSE was responsible for enforcing REPPIR in relation to both nuclear and non-nuclear work. In April 2014, the ONR was established by the Energy Act 2013¹⁸ and since that time ONR has been responsible for enforcing REPPIR in so far as it applies to nuclear sites. Enforcing REPPIR in so far as it applies to non-nuclear sites has remained the responsibility of HSE.

25. The Euratom Treaty, under which the 1996 BSSD was made¹⁹, does not apply to defence nuclear activities. Notwithstanding this, REPPIR currently does apply to Defence activities. Regulation 18 of REPPIR enables the Secretary of State of Defence to make a certificate exempting HM Forces from all or any of the obligations of REPPIR if it is in the interests of national security to do so. If any such certificate is in place, REPPIR does not apply to the extent set out in the certificate.

26. The relevant provisions of the BSSD 2013 we will be implementing are set out in detail below and relate to:

- 26.1. Definition of an Emergency;
- 26.2. Definition of Emergency Worker and prior information and training;
- 26.3. Reference levels;
- 26.4. Emergency response;
- 26.5. Provision of information to public likely to be affected;
- 26.6. Provision of information to public actually affected;
- 26.7. Emergency management system;
- 26.8. Emergency preparedness;
- 26.9. International cooperation; and,
- 26.10. Enforcement.

¹⁵ <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:01996L0029-20000513&from=EN> (amended)

¹⁶ Sections 15(1), (2), (3)(a), 4(b), 5(a) and (b), 43(2) and 82(3)(a) of, and paragraphs 3(1), 6, 8(1), 11, 14, 15(1) and 16 of Schedule 3 to, the Health and Safety at Work etc. Act 1974.

¹⁷ http://www.legislation.gov.uk/ukpga/1972/68/pdfs/ukpga_19720068_en.pdf

¹⁸ http://www.legislation.gov.uk/ukpga/2013/32/pdfs/ukpga_20130032_en.pdf

¹⁹ See Articles 2(b) and 30-33 of the EURATOM Treaty.

Article 4 – definition of an Emergency

4(26) "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

27. REPPIR currently defines a 'radiation accident' and a 'radiation emergency' as follows:

"radiation accident" means an accident where immediate action would be required to prevent or reduce the exposure to ionising radiation of employees or any other persons and includes a radiation emergency.

"radiation emergency" means any event (other than a pre-existing situation) which is likely to result in any member of the public being exposed to ionising radiation arising from that event in excess of any of the doses set out in Schedule 1 and for this purpose any health protection measure to be taken during the 24 hours immediately following the event shall be disregarded.

28. Schedule 1 specifies that the trigger dose for the purposes of identifying a radiation emergency as "an effective dose of 5mSv in the period of one year immediately following the radiation emergency".

29. It is the government's view that the current definition of a radiation emergency in REPPIR is too narrow to be relied on to implement the requirements of the BSSD 2013. We note that it is concerned solely with the exposure of a member of the public to ionising radiation. The definition in the BSSD 2013, by contrast, refers not just to serious adverse consequences to human health and safety, but also to serious adverse consequences to quality of life, property or the environment.

30. The inclusion of an explicit reference to the environment in the definition of a radiation emergency is notable. That said, the government notes that planners are already required to consider how to reduce the transfer of radioactive substances to individuals from the environment (see Schedule 8 Part II of REPPIR). As such, the government considers that the reference to the environment that will be included in the new definition of a radiation emergency should in practice be more a clarification of existing emergency preparedness obligations, rather than the introduction of a new planning obligation that did not previously exist. It is hoped that the new definition will make clearer to dutyholders the need to consider the direct and indirect impacts of contamination of the environment as a result of a nuclear or radiological emergency, and to plan accordingly.

31. Expanding the definition of an emergency to include non-health impacts should also shift the focus of planning from medical countermeasures towards other protective measures, in effect driving a more holistic approach to nuclear emergency preparedness. It is hoped that this will not increase costs and that it should deliver better outcomes for public protection.

32. The BSSD 2013 definition also does not, as the REPPIR definition does, specify a trigger dose of radiation exposure that must be reached before there can be a radiation emergency. Under the BSSD 2013 definition, it is the potential consequences of a release, rather than the amount of radiation released, that gives rise to a radiation emergency.

33. The government also notes that the use of any trigger dose to define a radiation emergency creates a gap for sites which do not meet the threshold (in other words, a binary rather than graded approach to emergency preparedness), and is concerned that, as a consequence, REPPIR may not currently require sites close to either side of the threshold to do proportionate

levels of planning. The government has reservations about the continuing appropriateness of the 5mSv dose and methodology.

34. The government is aware that the IAEA, in the General Safety Requirements, Part 7²⁰, uses a slightly different definition of nuclear or radiological emergency:

*“**emergency.** A non-routine situation or event that necessitates prompt action, primarily to mitigate a hazard or adverse consequences for human life, health, property or the environment. This includes nuclear and radiological emergencies and conventional emergencies such as fires, releases of hazardous chemicals, storms or earthquakes. This includes situations for which prompt action is warranted to mitigate the effects of a perceived hazard*

***nuclear or radiological emergency.** An emergency in which there is, or is perceived to be, a hazard due to:*

- (a) The energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction;*
- (b) Radiation exposure.”*

35. The government’s intention is to ensure the definition of emergency in REPPiR is revised so it is equivalent in scope to the BSSD 2013 definition and also reflects the clarity of the IAEA definition.

36. The new definition will not include a trigger dose for the reasons set out above. The government recognises that this change is a significant one for the sector, because of the pivotal role of the 5mSv trigger dose in current legislation, and intends to work with the regulators to ensure there is effective guidance to assist dutyholders with the transition to plans based on a graded approach. Given the challenges inherent in accurately estimating the likely effective dose associated with various emergency scenarios, it is hoped that removing this trigger dose will make the system more transparent and easier for dutyholders to understand and comply with.

37. The government is also minded to remove the definition of, and references to, a radiation accident in the new regulations, and instead use the new definition of emergency throughout the new regulations. It is hoped this change will make the new regulations simpler and easier to use and aligns us better with generic emergency preparedness legislation (such as the CCA 2004).

Articles 4 and 17 – definition of Emergency Worker and prior information and training

4(31) "Emergency worker" means any person having a defined role in an emergency and who might be exposed to radiation while taking action in response to the emergency;

17(1) Member States shall ensure that emergency workers who are identified in an emergency response plan or management system are given adequate and regularly updated information on the health risks their intervention might involve and on the precautionary measures to be taken in such an event. This information shall take into account the range of potential emergencies and the type of intervention.

²⁰ http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

17(2) As soon as an emergency occurs, the information referred to in paragraph 1 shall be supplemented appropriately, having regard to the specific circumstances.

17(3) Member States shall ensure that the undertaking or the organisation responsible for the protection of emergency workers provides to emergency workers referred to in paragraph 1 appropriate training as provided for in the emergency management system set out in Article 97. Where appropriate, this training shall include practical exercises.

17(4) Member States shall ensure that, in addition to the emergency response training referred to in paragraph 3, the undertaking or the organisation responsible for the protection of emergency workers provides these workers with appropriate radiation protection training and information.

38. There is currently no specific definition of an emergency worker in REPIR, the CCA 2004 or any other relevant UK law. In order to effectively transpose Article 17 (which requires prior information and training for emergency workers), UK law needs to recognise and define the concept of an emergency worker. In addition, the BSSD 2013 will require those emergency workers identified in an emergency response plan to have their training and information about the risks they are taking regularly updated, supplemented appropriately according to the specific circumstances in the event of an emergency.

39. Currently employers or any employee who may be involved with, or affected by, an operator's plan or may be required to participate in the implementation of an off-site plan, must provide the employees with suitable and sufficient information, instruction and training.

40. Further to this, if there is the possibility of them receiving an emergency exposure, the employer must provide them with appropriate training on radiation protection which is sufficient for them to know the risk to health and the precautions to take. Current guidance refers to these people as intervention personnel.

41. The government's intention is to transpose the BSSD 2013 definition into the new regulations with a meaning broadly aligned with the current understanding of intervention personnel. The government's expectation is that all people who are involved in a response who may be exposed to radiation should have training proportionate to the consequence and likelihood of something happening and the skill required to perform that function. For example, intervention personnel who are distributing stable iodine must know how to do it and the risks they are taking. Furthermore, in instances where it is not possible to foresee the exact persons who will be emergency workers in the actual event of an emergency, there must be proportionate, tested provision for on-the-day training for such workers, and they must be informed of any risks they would be taking.

42. REPIR guidance states that refresher training should be provided and stakeholders confirm they already regularly provide this. On the issue of supplementary information at the time of an emergency, stakeholders confirm this action is already taken on exercise and would be replicated during a real emergency. This is in keeping with the intention that dutyholders adopt a proportionate approach to planning.

43. We do not anticipate any costs as stakeholders have confirmed they are already compliant with the proposed changes in practice.

44. In addition to this new definition, the government plans to clarify the situations in which emergency workers can be exposed to levels of radiation in excess of the dose limits in the IRRs. At present, regulation 15 of REPIR dis-applies those dose limits in the event of a radiation emergency. However, the definition of emergency means dose limits could still apply where a release (however severe) would only occur on site, where a release would be below 5mSv, or where action was taken to prevent an emergency. The government intends to clarify through the

new regulations that, in the event of an emergency and to prevent an emergency, exposure up to the levels set for an emergency worker is lawful.

Article 7 – reference levels

7(1) Member States shall ensure that reference levels are established for emergency and existing exposure situations. Optimisation of protection shall give priority to exposures above the reference level and shall continue to be implemented below the reference level.

7(2) The values chosen for reference levels shall depend upon the type of exposure situation. The choices of reference levels shall take into account both radiological protection requirements and societal criteria. For public exposure the establishment of reference levels shall take into account the range of reference levels set out in Annex I.

Annex I: Without prejudice to reference levels set for equivalent doses, reference levels expressed in effective doses shall be set in the range of 1 to 20 mSv per year for existing exposure situations and 20 to 100 mSv (acute or annual) for emergency exposure situations.

45. Reference levels are an international concept, originating from the International Commission on Radiological Protection (ICRP), and are required by the BSSD 2013. They relate to the total residual dose (the dose expected to be incurred by an individual after protective actions have been fully implemented) estimated to be received over the first year of the emergency from all pathways or, in some situations, to an acute dose received over a short time period.

46. The doses against which the reference level is compared therefore include both the short-term exposures received during the emergency and also the longer-term exposures over the remainder of the first year. Reference levels aim to achieve an optimised response over all exposure pathways and countermeasures in the first year.

47. Reference levels are a new concept in the UK's legislative and administrative framework for nuclear and radiological emergencies. The UK uses other dose criteria, for example Emergency Reference Levels (ERLs) which are set by Public Health England (PHE), and which relate to the introduction of early countermeasures to protect the public in the event of an emergency. ERLs relate to the dose averted in the first few days by a specific countermeasure from the short-term exposure pathways. As such, ERLs were not designed to consider the full residual dose in light of exposures and countermeasures taken over the remainder of the first year. They can be regarded as being complementary to reference levels, but they are not alternatives or replacements and will continue to be part of nuclear emergency preparedness.

48. ERLs are aimed at reducing the early exposures in a way that balances the benefits and drawbacks of each early countermeasure separately. They are primarily a tool used in planning, with countermeasure zones planned on the basis of ERLs and other local factors.

49. Given this, the government intends to focus on implementing the specific reference level requirements of the BSSD 2013. The government will introduce secondary legislation to establish a National Reference Level and the new regulations that will replace REPPiR will require that off-site plans take account of the National Reference Level – giving priority to exposures above the National Reference Level and following the principles in a revised version of Schedule 8 to REPPiR. International guidance on reference levels and their implementation is currently being developed, notably at the IAEA, which we will want to reflect on and incorporate in the supporting guidance when it is available.

50. ICRP has indicated that reference levels relate to a level of residual, effective dose in a range of 20 to 100 mSv per year (with the possibility of this being an acute dose in some circumstances). We therefore plan to transpose a National Reference Level of 100mSv effective dose in the first year. This value is consistent with some other EU countries. We plan to use the highest level in the ICRP range as there are potential scenarios for which planning cannot ensure that all doses are below this level. This argument is being used elsewhere in EU countries for the setting of the National Reference Level at 100mSv in the first year. The government will work with PHE to develop guidance to support the application of the National Reference Level.

51. The government is conscious that individual sites and/or local authorities may wish to establish a reference level for planning which is lower than the proposed National Reference Level of 100mSv/y. If this is the case, the government would want to permit lower levels to be set after discussion with relevant bodies (for example, the regulator or PHE). The government also wants to permit lower levels to be set in response to an emergency, if appropriate. The government therefore intends to draft the new regulations in such a way as to permit this flexibility.

52. Article 7 also requires that established reference levels inform the optimisation of protection strategies in the event of an emergency. This is reiterated in Section B Annex XI. To this end, the government is minded to encourage local authorities to make provision in their plans for the establishment of a reference level in the event of an emergency. We also intend to make provision for the Secretary of State or Devolved Administration to do this where a local authority is not able to (for example where an emergency crosses local authority boundaries).

53. The government does not consider that any additional changes in the new regulations would be required to ensure optimisation of protection. This is because Parts I and II of Schedule 8 to REPPiR, which set out the principles to which emergency plans should have regard and purposes of intervention, already require this approach.

54. Part I of Schedule 8 requires plans to be created with the intention to keep exposures to radiation as low as reasonably practicable. Similarly, the purposes for intervention in an emergency situation include “reducing the exposures and organising the treatment of persons who have been subject to exposure to radiation”. The government cannot envisage a situation in which these principles are adhered to that would not focus protection on groups or areas which have received higher doses of radiation.

55. Accordingly, the government intends to make similar provision to Schedule 8 in the new regulations. This similar provision to Schedule 8 will be redrafted (see the section on Article 97(3) below) and we are considering making the link between these principles and the optimisation of protection strategies more explicit. The government intends in any event to retain the principle that plans should be designed with the intention of keeping exposures to radiation as low as reasonably practicable, and that one of the primary purposes of any intervention under a plan should be reducing the exposures and organising the treatment of persons who have been subject to exposure to radiation.

With regards to the transposition of the definitions of Emergency and Emergency Worker and the concept of reference levels into GB law, do you have any views or suggested improvements? If yes, please provide further detail.

Article 69 – emergency response

69(1) Member States shall require the undertaking to notify the competent authority immediately of any emergency in relation to the practices for which it is responsible and to take all appropriate action to reduce the consequences.

56. There are two requirements in this article: the notification of the Competent Authority following an emergency and taking appropriate action to reduce the emergency's consequences. Operators are currently required to take these actions by regulation 13(1) of, and Schedule 7 to, REPPiR, and the Nuclear Installations Act of 1965.

57. Operators are required by current regulations to notify the Executive without delay in the event of a radiation emergency and to make provision in their plans for providing information to the local authority. The Nuclear Installations Act of 1965²¹ and the ONR Licence Condition Handbook²² provide further guidance. This requires that, in the event of a radiation emergency, immediate notification should be made, and initial steps in the off-site notification chain should be carried out. The Nuclear Emergency Planning and Response Guidance²³ provides further relevant details in the Alerting and Activation Process and the Declaration States sections.

69(2) Member States shall ensure that, in the event of an emergency on their territory, the undertaking concerned makes an initial provisional assessment of the circumstances and consequences of the emergency and assists with protective measures.

58. REPPiR currently places a duty on the operator to conduct “a provisional assessment of the circumstances and consequences of such an emergency” as soon as is reasonably practicable. This assessment shall involve consultation with those outlined as having functions under the operator's emergency plan or the off-site emergency plan. Further guidance is provided on the Alerting and Activation Process, and the Declaration States sections of the NEPRG.

69(3) Member States shall ensure that provision is made for protective measures with regard to:

(a) the radiation source, to reduce or stop the radiation, including the release of radionuclides;

(b) the environment, to reduce the exposure to individuals resulting from radioactive substances through relevant pathways;

(c) individuals, to reduce their exposure

59. Part I of Schedule 7 to REPPiR currently specifies that emergency plans must contain “a description of the action which should be taken to control the conditions or events and to limit their consequences”.

60. Schedule 8 to REPPiR currently stipulates the purposes for intervention in an emergency situation. This aims at “reducing or stopping at source, direct radiation and the emission of radionuclides; reducing the transfer of radioactive substances to individuals from the environment; and reducing the exposures and organising the treatment of persons who have been subject to exposure to radiation”. These three purposes for intervention must be considered in relation to both operator (see regulation 7 of REPPiR) and off-site (see regulation 11 of REPPiR) emergency plans.

69(4) In the event of an emergency on or outside its territory, the Member State shall require:

(a) the organisation of appropriate protective measures, taking account of the real characteristics of the emergency and in accordance with the optimised protection strategy as part of the emergency response plan, the elements to be included in an emergency response plan are indicated in Section B of Annex XI;

²¹ http://www.legislation.gov.uk/ukpga/1965/57/pdfs/ukpga_19650057_en.pdf

²² <http://www.onr.org.uk/documents/licence-condition-handbook.pdf>

²³ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/472422/NEPRG02_-_Response.pdf

61. Table 1 below details BSSD 2013 Section B of Annex XI, and compares these requirements against current and future UK legislation, guidance or administrative arrangements.

Table 1 – Section B Annex XI requirements compared with relevant UK legislation, guidance or administrative arrangements

Section B Annex XI	How the UK meets, or will meet, the BSSD 2013 requirement
Reference levels for public exposure, taking into account the criteria laid down in Annex I.	See separate discussion on Article 7 above. (Paras 45-).
Reference levels for emergency occupational exposure, taking into account Article 53.	An employee is already permitted under the emergency exposures section of REPIIR to be exposed to higher levels of radiation in the event of an emergency and according to certain other conditions. In line with BSSD Article 53 2(b), the limit for exposure of an emergency worker will be set at 500 mSv. See separate section on Emergency Workers (Article 4, Paras 38-).
Optimised protection strategies for members of the public who may be exposed, for different postulated events and related scenarios.	See discussion of optimisation of protection (Article 7, Paras 52-).
Predefined generic criteria for particular protective measures.	In the UK we use Emergency Reference Levels (ERLs) for planning. These set out at what countermeasures planners should consider for offsite dose of radiation. (see discussions on Article 7, Paras 47-)
Default triggers or operational criteria such as observables and indicators of on-scene conditions.	The ERLs discussed above can be used as a reference point in a response. The relevant local authority, PHE, NHS primary care trusts, ambulance services, police and fire and rescue services will consider ERLs – supplemented by other indicators – to determine the optimal response in the event of an emergency.
Arrangements for prompt coordination between organisations having a role in emergency preparedness and response and with all other member states and with third countries which may be involved or are likely to be affected.	Parts I-III of Schedule 7 of REPIIR. This requires that, at the local level, relationships between organisations are clear. The CCA 2004 sets out the UK’s overall system for coordination. International coordination is covered under Article 99.
Arrangements for emergency response plan to be reviewed and revised to take account of changes or lessons learned from exercises and events.	Regulation 10 of REPIIR requires that plans are reviewed, revised and tested. Regulation 13 (b) of REPIIR requires an assessment of the effectiveness of plans put into effect as a result of an emergency. See separate discussion on Article 98.4
Arrangements shall be established in advance to revise these elements, as appropriate in an emergency exposure	The NEPRG – Annex C, Risk Assessment ²⁴ acknowledges that emergency preparedness measures cannot be precisely pre-planned because the nature and potential consequences of

²⁴ [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/472426/NEPRG04 - Annexes.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/472426/NEPRG04_-_Annexes.pdf)

situation, to accommodate the prevailing conditions as these evolve throughout the response.	emergencies can vary, for example, due to weather conditions, and that the exact response must be based on an assessment made at the time.
Promptly implementing protective measures, if possible, before any exposure occurs.	REPPIR Schedule 8 Part II stipulates the purposes for intervention in an emergency situation. We cannot envisage a situation in which these principles are adhered to, without promptly implementing protective measures.
Assessing the effectiveness of strategies and implemented actions and adjusting them as appropriate to the prevailing situation.	The NEPRG – Annex C, Risk Assessment sets out high-level principles for managing the response to an emergency. In addition, we cannot think of a situation in which aiming to reduce or stop radiation exposure (as required by REPPIR) could be done without adjusting to the prevailing situation. It is therefore hard to see what this adds to the principles of intervention in REPPIR Schedule 8.
Comparing the doses against the applicable reference level, focusing on those groups whose doses exceed the reference level.	See discussion on optimisation of protection (Article 7, Paras 52-).
Implementing further protection strategies, as necessary, based on prevailing conditions and available information.	The NEPRG – Annex C, Risk Assessment sets out high-level principles for managing the response to an emergency. As with many other requirements in this Annex, it is hard to envisage a situation in which the principles set out in Schedule 8 of REPPIR could be adhered to without implementing further, well informed, protection strategies as required.

(b) the assessment and recording of the consequences of the emergency and of the effectiveness of the protective measures.

62. Regulation 13(3)(b) of REPPIR currently requires that, in the event of an emergency, the operator must make a full assessment of the consequences of the emergency and the effectiveness of the plan in responding to it. In addition, both local and national level arrangements are in place for the assessment of scientific information to provide advice on the optimisation of protection strategies.

69(5) The Member State shall, if the situation so requires, ensure that provision is made to organise the medical treatment of those affected.

63. The medical treatment of people affected by a radiation emergency is currently addressed through Part II of Schedule 8 to REPPIR. This Schedule outlines the purposes of intervention in an emergency situation, of which one of the fundamental reasons is to reduce “the exposure and organising the treatment of persons who have been subject to exposure to radiation”. This must be stipulated in both the operator’s (see regulation 7(5) of REPPIR) and off-site emergency plans (see regulation 9(10) REPPIR).

64. The Ambulance Service has pre-determined roles and responsibilities in the event of a nuclear emergency that include: liaising with other emergency services, providing and updating situational reports to ambulance control, establishing locations for ambulance control and casualty clearing stations, and providing on-scene direction on casualty triage, extrication, stabilisation, clinical intervention and transport to appropriate hospitals. More details can be found in the NEPRG – Response Chapter.

65. Public monitoring would also be carried out by the NHS. PHE have produced guidance for the establishment of Radiation Monitoring Units (RMUs) to undertake radiation monitoring of the public²⁵. An RMU is used to determine levels of radioactive contamination in or on people and any subsequent requirement for decontamination. It will also inform decisions on the need for any medical interventions for persons contaminated with radioactive materials. In Scotland, guidance for Health Boards and other local partners on establishing Radiation Monitoring Units was produced in August 2017²⁶.

66. Accordingly, subject to the changes proposed above, the government considers that the current arrangements meet the requirements of Article 69 of the BSSD 2013 and does not plan to make any substantive changes to these arrangements in the new regulations and guidance.

Article 70 – provision of information to public likely to be affected

70(1) Member States shall ensure that the members of the public likely to be affected in the event of an emergency are given information about the health protection measures applicable to them and about the action they should take in the event of such an emergency.

70(2) The information supplied shall include at least the elements set out in Section A of Annex XII.

70(3) The information shall be communicated to the members of the public referred to in paragraph 1 without any request being made.

70(4) Member States shall ensure that the information is updated and distributed at regular intervals and whenever significant changes take place. This information shall be permanently available to the public.

67. Ensuring the public is provided with adequate information about health protection measures and the actions to take in an emergency situation is currently required by regulation 16 of REPIR. Operators are required to supply information to members of the public in an area which is likely to be affected in the event of a radiation emergency. The delivery of prior information is given support in the regulations which requires that the operator seeks to work with the local authority in the delivery of the information.

68. Section A of Annex XII of the BSSD 2013 sets out the types of information that must be provided to the public including the basic facts about radioactivity and its effects and the various types of emergencies covered, for example. Regulation 16(1) of, and Schedule 9 to, REPIR sets out a near-identical list of information. Ensuring that information is made available without a request having to be made is already a requirement in REPIR as regulation 16(1) states that the information must be made available to the public “without their having to request it, with at least the information set out in Schedule 9”. In addition, 16(1)(b) also requires that this information is made publicly available.

69. The requirement to update information and ensure this is permanently available to the public is addressed through regulation 16(4) and (5) of REPIR, which provide that information must be revised “at regular intervals, in any case, not less than once in three years”, or “whenever significant changes” to the information take place. Though REPIR does not explicitly state that information should be permanently available, we consider the requirement in regulation 16(1) to

²⁵ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340153/HPA-CRCE-017_for_website.pdf

²⁶ <http://www.readyscotland.org/media/1399/rmu-template-plan-guidance-august-2017.pdf>

ensure information is made readily available and without a member of the public having to request it has that effect.

70. Accordingly, the government considers that our current arrangements meet the requirements of Article 70 of the BSSD 2013 and does not plan to make any substantive changes to these arrangements in the new regulations and guidance. The government notes however that the expanded definition of emergency and the introduction of a graded approach to planning could have the effect of requiring the provision of information to persons in outline planning areas where there is no current requirement for them to receive information. In these instances this will require careful handling.

Article 71 – provision of information to public actually affected

71(1) Member States shall ensure that, when an emergency occurs, the members of the public actually affected are informed without delay about the facts of the emergency, the steps to be taken and, as appropriate, the health protection measures applicable to these members of the public.

71(2) The information provided shall cover those points listed in Section B of Annex XII which are relevant to the type of emergency.

71. Ensuring that affected members of the public are provided with information and advice in the event of an emergency is currently provided for in regulation 17 of REPPiR which requires the local authority to supply information to affected members howsoever that emergency may arise. The information to be supplied is in Schedule 10 to REPPiR and includes, but is not limited to: information on the type of emergency that has occurred and advice on health protection measures. The government does not consider there to be any gaps in legislation with regards to this article. Section B of Annex XII of the BSSD 2013 requires largely the same information to be provided.

72. Table 2 sets out a side-by-side comparison of Section B of Annex XII of the BSSD 2013 and Schedule 10 with REPPiR.

Table 2 – Section B Annex XII requirements compared against REPPiR Schedule 10

Section B, Annex XII BSSD 2013	REPPiR, Schedule 10
Information on the type of emergency which has occurred and, where possible, its characteristics (for example, its origin, extent and probable development).	Information on the type of emergency which has occurred and, where possible, its characteristics, for example, its origin, extent and probable development.
Advice on protection which, depending on the type of emergency, may: (i) Cover the following: restrictions on the consumption of certain foodstuffs and water likely to be contaminated, simple rules on hygiene and decontamination, recommendations to stay indoors, distribution and use of protective substances, evacuation arrangements;	Advice on health protection measures which, depending on the type of emergency, may include: (a) Any restrictions on the consumption of certain foodstuffs and water supply likely to be contaminated; (b) Any basic rules on hygiene and decontamination; (c) Any recommendation to stay indoors; (d) The distribution and use of protective substances; (e) Any evacuation arrangements; (f) Special warnings for certain population groups. Any announcements recommending cooperation with instructions or

<p>(ii) Be accompanied, where necessary, by special warnings for certain groups of the members of the public;</p> <p>(iii) Announcements recommending cooperation with instructions or requests by the Competent Authority.</p>	<p>requests by the competent authorities.</p>
<p>If the emergency is preceded by a pre-alarm phase, the members of the public likely to be affected shall already receive information and advice during that phase, such as:</p> <ul style="list-style-type: none"> (a) An invitation to the members of the public concerned to tune in to relevant communication channels; (b) Preparatory advice to establishments with particular collective responsibilities; (c) Recommendations to occupational groups particularly affected. 	<p>Where an occurrence which is likely to give rise to a release of radioactivity or ionising radiation has happened, but no release has yet taken place, the information and advice should include the following:</p> <ul style="list-style-type: none"> (a) An invitation to tune in to radio or television; (b) Preparatory advice to establishments with particular collective responsibilities; and (c) Recommendations to occupational groups particularly affected.
<p>This information and advice shall be supplemented, if time permits, by a reminder of the basic facts about radioactivity and its effects on human beings and on the environment.</p>	<p>If time permits, information setting out the basic facts about radioactivity and its effects on persons and on the environment.</p>

73. The government notes that the current wording in paragraph 4(1) of Schedule 10 to REPIR requires that information to the public should include “an invitation to tune in to radio or television”. We propose updating this to “relevant communications channels”, both to ensure that the requirements of the BSSD 2013 are properly transposed, and to reflect the fact that modern communications channels like the internet may be the most effective way to communicate with the public in the event of an emergency.

74. Other than that, the government considers that the current arrangements meet the requirements of Article 71 of the BSSD 2013 and does not plan to make any substantive changes to these arrangements in the new regulations and guidance. Again, the government notes that the expanded definition of emergency and the introduction of the graded approach could have the effect of requiring some dutyholders to provide information to persons where they are not currently required to supply it. In these instances this will require careful handling.

Article 97 – emergency management system

97(1) Member States shall ensure that account is taken of the fact that emergencies may occur on their territory and that they may be affected by emergencies occurring outside their territory. Member States shall establish an emergency management system and adequate administrative provisions to maintain such a system. The emergency management system shall include the elements listed in Section A of Annex XI.

75. The UK’s current emergency management system consists of:

- a. Detailed planning for nuclear emergencies around licensed sites. The legal basis for this is in REPPIR. For an emergency at a civil nuclear site in UK, initial response measures to protect the public should be informed by the detailed planning contained in the local authorities' off-site plans.
- b. Generic emergencies planning at the local and national levels. The legal basis for this is in the CCA 2004 which is separated into two substantive parts: local arrangements for civil protection (Part 1) and emergency powers (Part 2). This law, accompanying non-legislative measures, delivers a single framework for civil emergency protection across the UK.

76. Table 3 compares the requirements for the emergency management system required by Section A of Annex XI with the BSSD 2013 to current arrangements:

Table 3 – Section A of Annex XI – Elements to be included in an emergency response plan

Section A, Annex XI BSSD 2013	How the UK meets the BSSD 2013 requirement
Assessment of potential emergency exposure situations and associated public and emergency occupational exposures.	Regulation 4 of REPPIR requires hazard identification and risk evaluation to identify all hazards with the potential to cause a radiation emergency.
Clear allocation of the responsibilities of persons and organisations having a role in preparedness and response arrangements.	These are set out in nuclear sites' emergency plans as required in Parts I-III of Schedule 7 of REPPIR.
Establishment of emergency response plans at appropriate levels and related to a specific facility or human activity.	Regulation 9 of REPPIR requires off-site planning at sites where there is a postulated risk of an off-site release of radiation. Off-site planning will remain a requirement of new regulations.
Reliable communications and efficient and effective arrangements for cooperation and coordination at the installation and at appropriate national and international levels.	This is set out in Nuclear NEPRG Section 2, Radiation Emergency Response Structure. This chapter provides a high-level summary of the groups at each level and the way in which they can be expected to interact with the other levels of the response during a radiation emergency. These levels include: site level, local level, national level, regional level, devolved administrations, international and those nuclear or radiological emergencies occurring overseas.
Health protection of emergency workers.	Regulation 14 of REPPIR requires that employees who might be subject to emergency exposures are provided with training, information and equipment to restrict exposure to radiation.
Arrangements for the provision of prior information and training for emergency workers and all other persons with duties or responsibilities in emergency response, including regular exercises.	Regulation 14(b) of REPPIR requires that employees who may be subject to emergency exposure receive appropriate training.
Arrangements for individual monitoring or assessment of individual doses of emergency workers and dose recording.	Regulation 14(c) REPPIR requires that arrangements are made for medical surveillance by an appointed doctor and (d) for dose assessments.
Public information arrangements.	See the sections on Articles 70/71 above.

Involvement of stakeholders.	Regulation 11(3) of REPIR requires those making emergency plans to cooperate and share information with those required to participate in any response or exercise of that plan. Regulations 7(6) and 9(12) of REPIR also require consultation with stakeholders.
Transition from an emergency exposure situation to an existing exposure situation including recovery and remediation.	See the section on Article 98.3 below.

77. The government notes that, with the exception of the requirement for reliable communications and efficient and effective arrangements for cooperation and coordination at the installation and at appropriate national and international levels, all of the requirements for the emergency management system required by Section A of Annex XI to the BSSD 2013 are currently provided for in REPIR. The government therefore proposes to implement the requirements for Section A of Annex XI with equivalent provisions in the new regulations.

78. In relation to the requirement for reliable communications etc, the government considers that the current arrangements, as set out in the NEPRG Section 2, Radiation Emergency Response Structure, meet the requirements of the BSSD 2013 in practice. However, the government is minded to make explicit reference in the new regulations for the need for emergency plans to provide for reliable communications and efficient and effective arrangements for cooperation and coordination. This would ensure that the current arrangements in guidance are expressly linked to a regulatory requirement in legislation, and would align with the existing requirement, under the CCA 2004, to exercise and test the information sharing and also interoperability of communications.

97(2) The emergency management system shall be designed to be commensurate with the results of an assessment of potential emergency exposure situations and to be able to respond effectively to emergency exposure situations in connection with practices or unforeseen events.

79. Regulation 4 of REPIR currently requires site operators to perform a risk assessment – the Hazard Identification and Risk Evaluation (HIRE) process. The HIRE identifies and evaluates all potential hazards and is an “assessment of potential emergency exposure situations”. The government considers that equivalent provision in the new regulations will ensure that the UK is compliant with the requirement that there be an “assessment of potential emergency exposure situations”. See discussion under Article 98(1), paragraphs 118-120.

80. Regulation 9 of REPIR currently requires local authorities to prepare detailed off-site emergency plans where a radiation emergency (see Definition of an Emergency, Article 4) is reasonably foreseeable. The government has considered carefully the origins and current usage of the “reasonably foreseeable” threshold for requiring an off-site plan and considers that maintaining this threshold would not fulfil the requirements in Article 97(2) that the “emergency management system shall be designed to be commensurate with the results of an assessment of potential emergency exposure situations and to be able to respond effectively to emergency exposure situations in connection with practices or unforeseen events”.

81. The government reached this conclusion for the following reasons:

- The reasonably foreseeable threshold is only a measure of likelihood and does not consider the severity of harm caused by an emergency. The government considers that, for the UK’s emergency management system to be commensurate with the results of an assessment of potential emergency exposure situations, likelihood cannot be the only

driver of planning. It is the government's view that it is proportionate to require some planning for events of very low probability, but severe impact.

- Although it is not defined in regulations or guidance, in practice the reasonably foreseeable threshold has been deemed to be events that can be reasonably expected to occur approximately once in a period of 100,000 years. It has become clear from the government's discussions with the European Commission and other member states that the intent of the requirement in Article 97(2) is to ensure that member states plan for events of even lower probability not previously considered. This is also true of the IAEA's GSR7.
- Article 97(2) expressly requires the emergency management system to be able to respond effectively to emergency exposure situations in connection with unforeseen events. The government does not consider that an emergency management system that only requires planning for reasonably foreseeable events can be said to be able to respond effectively to radiation emergencies caused by unforeseen events.

82. In the civil nuclear sector, industry and ONR have already sought to address some of the drawbacks of using a likelihood threshold to determine planning. For example, ONR have required cliff-edge testing to ensure that if there are more severe emergency scenarios close to this likelihood, then those emergencies drive the planning determinations. Extendibility assessments were introduced post-Fukushima and examined how existing, detailed off-site plans could be extended in the event of an emergency that was more severe. These assessments have been delivered by Local Resilience Forums / Resilience Partnerships and nuclear operators on what they judge to be both reasonably practicable and worthwhile to implement. Considered non-regulatory best practice, they do not constitute planning, but form a useful foundation for the proportionate planning that the government considers Article 97(2) of the BSSD 2013 requires. The results of these assessments have provided useful learning.

83. Building on this work, the government proposes that the new regulations should not have a reasonably foreseeable threshold for emergency planning. Instead (as is currently the case with emergency planning for the transport of nuclear or radioactive material) emergency plans would be required as is appropriate for the site based on a proportionate response to the risks identified in the HIRE process.

84. The government proposes to introduce a proportionate and graded approach to planning. The appropriateness of planning would be a decision for the local authority (who owns the off-site plan) but ONR and HSE will inform and oversee the decision-making process to ensure appropriate standards are being maintained. The local authority would be supported in this decision by:

- Improved and standardised communication of all of the risks and consequences posed by the site from operators;
- Expert advice from PHE and ONR or HSE; and,
- Suggested approaches to setting planning zones articulated in the Code of Practice.

85. The graded approach would mean that the emergency management system is able to effectively respond to the impact of a wide range of nuclear emergencies. The details of the proposed approach are set out in the table below.

Table 4: Graded approach to planning

On-site planning	Intermediate planning	Detailed and Outline planning
<p>Postulated dose under 1mSv* Where an off-site release requiring protective actions is not possible</p>	<p>Postulated dose of 1-5mSv Where a significant off-site release is postulated and protective actions (in addition to generic planning) may be needed</p>	<p>Postulated dose over 5mSv Where a very significant off-site release is postulated and protective actions (in addition to generic planning) will be required</p>
<ul style="list-style-type: none"> • Outside the scope of the new regulations • Sites perform an IRR risk assessment • On-site planning for contingencies (as per the IRRs and/or Licence conditions) <p>* This postulated dose is based on a very conservative estimate of the doses that could correspond to the release of all inventory holdings</p>	<ul style="list-style-type: none"> • Within the scope of the new regulations • Site performs more detailed hazard assessment (HIRE) • Information about the hazard & consequences shared with the local authority • On-site planning (as per the IRRs and/or Licence conditions) • Some outline planning required; may be subject to local authority views 	<ul style="list-style-type: none"> • Within the scope of the new regulations • Site performs more detailed hazard assessment (HIRE) • Information about the hazard & consequences shared with the local authority • On-site planning (as per the IRRs and/or Licence conditions) • Detailed planning around the site for more likely emergencies • Outline planning around the site for less likely emergencies

86. The government intends to create a regulatory framework that applies proportionately to nuclear and radiological activities. The BSSD 2013 requires us to create flexible plans which can deal with the impact of a wide range of emergencies. This means the local authorities must plan proportionately for the full range of emergencies including events of very low probability (with a severe impact). For some activities and sites, this will mean planning over larger distances than at present, as well as introducing consideration of the need to plan for those activities and sites which currently do not have plans under REPPiR.

87. The government intends the effect of the proposed changes to the nuclear emergency preparedness regime to lead to plans that are commensurate in detail and scale for all nuclear emergencies. This will include planning for unforeseen events, i.e. including events with more severe consequence; this includes emergencies that site operators may believe to be very unlikely, such as those that involve multiple/total barrier failures and are not considered in the design.

88. In order to reflect the requirement for commensurate planning, the government intends to retain the principle of detailed planning (which currently happens within the DEPZ), but also introduce the concept of outline planning.

89. Extendibility assessments on the challenges of building on detailed emergency preparedness arrangements for more severe emergencies have shown there are challenges associated with effectively increasing the scale of public protection actions, such as evacuation or shelter, without some degree of prior consideration and planning. Consequently, the government proposes to introduce outline planning for emergencies which have more severe consequences, but are far less likely to occur. Correspondingly, this will happen over a much larger area than detailed planning and could be introduced for sites where currently detailed off-site planning does not exist.

90. The government's intention is that a level of detailed planning will remain broadly comparable to current planning within the DEPZ. This may change to some degree given the revised public health protection assessment methodology being developed by PHE; see the Annex: How this could work in practice, (paras 10-13). Outline planning will operate beyond this, to a greater distance from the site, supplementing the detailed planning, but also mitigating against unforeseen events.

91. A Hazard Identification and Risk Evaluation (HIRE) process (currently required under Regulation 4 of REPPiR – see Article 98(1)) will be required by all sites that could give rise to a radiation emergency above 1mSv. Site operators will continue to identify and evaluate all potential hazards through the HIRE. The government proposes that the methodology behind the HIRE process will be updated so as to incorporate the new risk assessment methodologies by PHE to enable the HIRE to:

- Inform the extent of detailed emergency planning around a site;
- Determine whether and to what distance off-site planning is needed around a site; and,
- Provide the evidence base for justifying new outline planning zones that are different to the default distance (See the Annex: How this could work in practice for further detail).

92. The government would expect sites that currently have off-site plans in place to continue to be required to have them under the new regime. The government notes, however, that the UK's current off-site planning is completed with a high level of detail. Furthermore it believes that having very detailed planning close to the site, and only voluntary extendibility assessments beyond that, will not always be proportionate and does not always represent commensurate planning.

93. Outline nuclear emergency planning has already been put into place on a voluntary basis, for example, within Suffolk around the Sizewell B power station where the Suffolk Resilience Forum has introduced an outline emergency planning area that extends to 15kms; the detailed emergency planning area set by ONR is between 3-4kms. Similar outline planning zones beyond the detailed planning area are also in place at the Torness and Hunterston power stations.

94. Outline planning will generally happen within the outline planning zone and detailed planning will happen within the detailed emergency planning zone. Nonetheless, the efficacy of targeted, non-uniform planning was one of the major findings from the extendibility assessments carried out by operators and local authorities. Consequently there will be pockets of detailed planning inside the outline planning zone where local circumstances make it proportionate to put these in place (for example, hospitals and schools just outside the detailed emergency planning zone). Like outline plans, these detailed planning pockets may not necessarily be implemented automatically during an emergency. However, it is expected that the detail underpinning these actions would ensure that they can be implemented quickly, should it be required.

95. Under regulation 4.2 of REPPiR, sites currently have the responsibility to reduce the chance of an accident and, should it occur, the consequences. However, in planning for unforeseen events (specifically events not considered in the design) safety and security features used at sites cannot be used as a reason not to undertake hazard assessment or commensurate planning. We propose that safety and security features are therefore taken into account when determining what level of planning is appropriate (not whether planning should be undertaken at all). Where such features make an emergency less likely and/or less severe, this can be used to justify less detailed planning for that particular scenario, maintaining the incentive that sites reduce the likelihood of an emergency. Specific details of the outline planning could potentially be changed to take account of such features however.

96. Some local authorities with multiple dutyholders already coordinate planning for how they would handle an emergency affecting more than one dutyholder. For example, Oxfordshire County Council and the Harwell Oxford Campus are looking to put in place a voluntary offsite plan covering a number of sites which individually could not give rise to a radiation dose exceeding the current definition of emergency (5mSv) and therefore would not be required to have an offsite plan. The sites include Magnox, the Rutherford Appleton Laboratory, the Medical Research Council, Public Health England and Diamond. Together, these sites recognise that an incident for one could potentially affect the others on their Campus should an event occur, such as extreme

weather, a serious fire or a power cut. Additionally, the mutual support provided by this kind of arrangement would be a significant benefit if an emergency did occur. The government strongly supports this example as best practice.

97. For completeness, the government sees the other elements of the emergency management system required by Article 97(2) of the BSSD 2013, i.e. to ensure that it can respond effectively to emergency exposure situations in connection with practices or unforeseen events, as follows: On- and off-site planning will be supported by national capabilities which occur over much larger distances. For example, food monitoring and restrictions could, in certain emergency scenarios, cover an area that is within 20-40km from the site, but may be expanded (significantly), depending on the prevailing circumstances of the emergency.

98. Similarly, national monitoring assets such as RIMNET (the UK's nuclear radiation monitoring and nuclear emergency response system) are located across the country, and provide crucial radiological monitoring information (site-specific RIMNET monitors are being rolled out too). The UK has an array of other mobile monitoring assets that it can call upon in case of an emergency. PHE coordinate monitoring to make best use of resources made available to PHE. Meanwhile, Joint Agency Modelling (the UK's national hazard prediction capability) will use the combined expertise from several national organisations in order to provide local and national decision-makers with hazard predictions that will inform their response strategies. The government's medical countermeasures stockpile also contains substantial numbers of stable iodine tablets that can be used to bolster local supplies if necessary (see paragraphs [109-] where stable iodine use in an emergency is discussed further).

99. Additionally the CCA 2004 ensures there is a high level of generic emergency preparedness capabilities across the UK. This will be invaluable for bolstering emergency response capabilities within the outline planning zone, many of which are not unique to a nuclear or radiological emergency, while providing crucial preparedness, should consequences be felt further afield.

100. The government recognises that industry and local authorities will want additional guidance on proportionate planning. To that end, the government has been engaging closely with industry and regulators and the initial results are presented in the Annex: How this could work in practice. Further detail will be articulated in due course in the Code of Practice, informed by the outcome of this consultation.

101. The government expects that, in order for there to be a consistent approach to planning, and to ease regulatory oversight, there should be one off-site plan for each site. This means that both detailed and outline planning should be considered together and contained in the same document in order that they properly complement each other.

102. We recognise that some local authorities may need to work with neighbouring local authorities where the off-site plan for a site extends into the territory in more than one local authority. The government expects the lead local authority (the authority where the site is located) to liaise with the other local authorities, coordinating their supporting contributions to ensure that a single, coherent plan is developed.

103. The government notes that REPPIR currently allows for this and is minded to make similar provision in the new regulations. This would mean that the lead local authority coordination role would work in much the same way as it currently does when working in partnership with other organisations who will contribute to the plan (for example, emergency services, health authorities, environment agency, and so on).

104. Alternatively, the government could expressly provide in the new regulations that local authorities must, where the off-site plan for a site extends into the territory in more than one local

authority, work together to ensure that a single, coherent plan is developed, under the coordination of the lead local authority.

In relation to transposition of Article 97(2):

Do you have any information about, or views on, the impact of the proposed changes?

Are there any opportunities, as part of this modification of planning arrangements, to make detailed planning around sites less burdensome to operators or local authorities (while maintaining the standards of public protection)?

Do you have views on the proposal to require coordinated planning between multiple dutyholders (where they are in close proximity)? Do you have suggestions for how it could work in practice?

97(3) The emergency management system shall provide for the establishment of emergency response plans with the objective of avoiding tissue reactions leading to severe deterministic effects in any individual from the affected population and reducing the risk of stochastic effects, taking account of the general principles of radiation protection and the reference levels referred to in Chapter III.

105. There are currently requirements in regulations 7 and 9 of REPIR to establish emergency response plans. Part I of Schedule 8 to REPIR sets out the principles to which emergency plans shall have regard and includes a requirement to ensure that “exposures to radiation are kept as low as is reasonably practicable”.

106. PHE currently provides advice to planners to inform their response plans in their statement on Emergency Reference Levels (ERLs) which highlights the principles for protecting the public and includes the requirement to introduce “countermeasures to keep doses to individuals to levels below the thresholds for these [deterministic] effects”. This guidance is in the process of being revised.

107. The established reference level takes into account the effective dose from all exposure pathways, including food. In particular, there are maximum permitted levels (MPLs) in food and animal feed which would come into force following a nuclear emergency or other radiological emergency. Following an emergency, the government would be required to put in place legal controls which prevented food and animal feed exceeding these MPLs to be placed on the market. In exceptional circumstances, however, we would be able to derogate temporarily from the MPLs in respect of specified food or feed consumed on its territory based on scientific evidence and where it is duly justified by the circumstances, in particular the societal factor.

108. The government intends that reference levels will be used as an additional tool (over a longer period of time than ERLs) in optimising and justifying countermeasures in the event of an emergency (see the sections on Article 7). Reference levels will follow the principles to introduce countermeasures if they are expected to have a more beneficial, as opposed to detrimental, outcome and when the quantitative criteria used for the introduction and withdrawal of countermeasures should be such that protection of the public is optimised.

109. As noted above, the government intends to make similar provision to Schedule 8 in the new regulations. To fully implement the provisions of BSSD 2013, Schedule 8 is likely to be redrafted in line with the optimised protection strategies required by the Directive. The government is working closely with PHE on these changes.

110. Such changes could include:

- 110.1. Explicitly specifying that avoiding tissue reactions leading to severe deterministic effects in any individual from the affected population and reducing the risk of stochastic effects is an objective of emergency plans;
- 110.2. Explicitly requiring plans to take account of reference levels;
- 110.3. Recasting the requirement in sub-paragraph (a) of Part I of Schedule 8 so that it better reflects the wording in Article 97(2) of the BSSD 2013 that the emergency management system be designed to be commensurate with the results of an assessment of potential emergency exposure situations.

111. As the government considers that the requirement to provide for the establishment of emergency response plans in Article 97(3) is, for the most part, already implemented through the current requirements of REPPiR, we do not anticipate that the proposed changes set out above are likely to have a significant impact on dutyholders.

On stable iodine in emergency planning zones

112. The timely administration of stable iodine is an important countermeasure for certain types of radiation. As such, ensuring that members of the public, who are living around nuclear installations which have potential to release radioactive iodine, have quick access to stable iodine tablets in the event of a release is a necessary element of an emergency management system that is able to respond effectively to a nuclear emergency.

113. Currently, arrangements for the timely administration of stable iodine are in place in relation to the less severe, reasonably foreseeable emergencies for which REPPiR currently requires planning. Under these arrangements, stable iodine is pre-distributed to the day- and night-time population of the detailed emergency planning zone around nuclear installations.

114. In light of the new emergency planning arrangements proposed above (see the section on Article 97(2) of BSSD 2013), the government considers that these arrangements will need to be revisited to ensure that they can provide for the timely administration of stable iodine in the event of a more severe unforeseen emergency.

115. The government proposes that the new arrangements for the timely administration of stable iodine in the event of a nuclear emergency should have the following characteristics:

- Local responders²⁷ should be provided with the autonomy to choose their preferred distribution method, in light of particular local circumstances;
- Local responders must be able to distribute stable iodine in the event of an emergency, so the government will ensure that any legislative/regulatory changes that are needed to enable this will be made; and
- The government and the regulator will support local responders with guidance and advice in relation to fulfilling their responsibilities in relation to the procurement, storage and distribution of stable iodine.

116. The government's policy intent is to align stable iodine distribution policy with the wider, outcome-focused approach to emergency planning. Local responders will have the autonomy to make detailed decisions on matters such as how best to distribute stable iodine, considering local circumstances. This should be based on advice from, and working in partnership with, relevant public health bodies. However, they must satisfy the regulator that these arrangements are adequate and proportionately protect the public. The government also expects that in practice

²⁷ This includes Category 1 responders as defined under the Civil Contingencies Act 2004

local responders will choose to use the local hub/distribution method which is most aligned to the concept of 'outline' planning, and avoids some of the pitfalls of pre-distribution, such as low retention rates in large populations. By retaining control of the storage of stable iodine (rather than handing this to the public in advance), local responders can have the confidence that public access to stable iodine is maintained.

117. Accordingly, the government needs to ensure local responders have the full range of choices, and they are enabled to store and distribute stable iodine in the event of a more severe unexpected emergency. The need to remove the legal barriers preventing stable iodine distribution was identified through the extendibility assessments project. The proposed approach is detailed in the Annex: How this could work in practice.

Article 98 – emergency preparedness

98(1) Member States shall ensure that emergency response plans are established in advance for the various types of emergencies identified by an assessment of potential emergency exposure situations.

118. The government considers that the requirement to ensure that emergency response plans are established in advance for the various types of emergencies identified by an assessment of potential emergency exposure situations in Article 98 is, for the most part, already implemented through the current requirements of REPPIR and the IRRs. We therefore propose to make similar provision in the new regulations.

119. Regulation 4 of REPPIR currently requires operators to identify all hazards arising from their work with radiation. Operators share the outcomes of this process with the regulator and with the local authority. To ensure that this requirement is fully and universally met, the government proposes that the methodology for undertaking this process be standardised. This will also improve the information shared with local authorities who are responsible for planning for the emergencies identified, increasing the efficiency and openness of the process.

120. Given its central role in planning and ensuring the commensurateness of the emergency management system, the government is keen to ensure that the HIRE process is transparent and effective. While the first part of the process, the identification of risks by the operator will not be changed, the government is reviewing the current methodology being used in the calculation of off-site public health consequences. We are working with PHE to determine how methodologies can be made more consistent and are considering how the outputs can be made easier to understand. Given the change to the regulators' role in the process (no longer determining planning zones, but regulating local authority and operator-agreed planning zones), it is vital the methodologies used are robust and consistent. This will mean that we can be confident that the planning determinations from site to site are being determined consistently.

121. Regulation 9 of REPPIR currently requires local authorities to have plans for all reasonably foreseeable radiation emergencies. The government understands that, in many cases, this is achieved by focusing a single plan on the common consequences of a range of nuclear or radiological emergencies, rather than on the potential causes of such emergencies.

122. The government considers that dutyholders should be able to maintain a similar approach under the new regulations (bearing in mind that other changes in the regulations, such as those relating to the definition of emergency and the requirements of Article 97(2) set out above, are still likely to require substantive changes to current emergency plans).

123. Sites that do not currently require an off-site plan under regulation 9 of REPPIR are still required by the IRRs to undertake a prior risk assessment before they start any new activity with ionising radiation. HSE draws a link in guidance between this requirement for a risk assessment and regulation 3 of the Management of Health and Safety at Work Regulations which requires the

recording of the significant findings of the risk assessment (if there are five or more employees) and the maintenance of the risk assessment to keep it up to date where there has been a significant change in the matters to which it relates²⁸. HSE is revising the 1999 IRRs to implement other aspects of the BSSD 2013, but intends to maintain this requirement.

98(2) The emergency response plans shall include the elements defined in Section B of Annex XI.

124. See the sections on Article 69(4) for a detailed breakdown of how current arrangements in REPIR implement the requirements of Section B Annex XI.

125. Accordingly, the government considers that our current arrangements meet the requirements of Article 98(1)-(2) of the BSSD 2013 and does not plan to make any substantive changes to these arrangements in the new regulations and guidance.

98(3) The emergency response plans shall also include provision for the transition from an emergency exposure situation to an existing exposure situation.

126. REPIR does not currently include a provision for the transition from an emergency exposure situation to an existing exposure situation. However, the supporting REPIR guidance refers to the emergency plan addressing long-term recovery as best practice.

127. To meet the requirements of Article 98(3), the government proposes to add to the requirements for an off-site plan in the new regulations a requirement to plan for the transition from an emergency exposure situation to an existing exposure situation.

128. Both operators and local authorities will be required to include plans for the transition to recovery (an existing exposure situation) in their plan. This would include such considerations as the process for ending an emergency response and putting in place the recovery arrangements. The government does not anticipate this additional requirement causing a significant new burden on dutyholders, especially if any required changes are undertaken as part of the required review and update procedures for plans. Furthermore, as the process of transitioning from an emergency situation to a recovery situation is not specific to nuclear or radiological emergencies, the government anticipates that most local authorities will be able to draw on non-radiological processes to plan for the transition from an emergency exposure situation to an existing exposure situation.

129. For the avoidance of doubt, the requirement for the off-site plans will be limited to the transition to recovery and not planning for recovery itself. However, planning for recovery is still best practice and PHE has produced extensive guidance on it.

130. There is a separate consultation on public exposures and justification which includes proposals for how the BSSD 2013 should be transposed for radioactive contaminated land. These proposals address the requirement (see Article 73 of the BSSD 2013) to have optimised protection strategies in place for the effective management of areas requiring decontamination.

²⁸ Risk assessment (1) Every employer shall make a suitable and sufficient assessment of— (a)the risks to the health and safety of his employees to which they are exposed while they are at work; and (b)the risks to the health and safety of persons not in his employment arising out of or in connection with the conduct by him of his undertaking

98(4) Member States shall ensure that emergency response plans are tested, reviewed and, as appropriate, revised at regular intervals, taking into account lessons learned from past emergency exposure situations and taking into account the results of the participation in emergency exercises at national and international level.

131. The government considers that the requirement to ensure that emergency response plans are tested, reviewed and, as appropriate, revised at regular intervals in Article 98(4) is substantially implemented already through the current requirements of REPIR. We therefore propose to make similar provision in the new regulations, subject to the proposed changes described below.

132. Regulation 10 of REPIR places a duty on the operator or local authority to review, revise, and test their respective emergency plans (required under regulations 7 and 9) at suitable intervals not exceeding three years. The provisions of REPIR do not currently explicitly require plans to take account of lessons learned from past emergency exposure situations or of the results of the participation in emergency exercises at national and international level.

133. The government therefore proposes to include in the new regulations an express requirement that the process through which emergency plans are regularly reviewed ensures that such reviews take account of lessons learned. This requirement will be elaborated in the supporting Code of Practice. The government does not believe that this change should have a significant impact from a practical perspective as taking account of lessons learned is existing good practice that we understand dutyholders would normally incorporate in their review of plans in any event.

134. The government considers that similar provision to our current testing and review arrangements in the new regulations, plus the proposed changes described above, will ensure that the requirements of Article 98(4) of the BSSD 2013 are implemented.

135. In the interests of ensuring that Great Britain has in place an effective emergency management system as required by Article 97(2) of the BSSD 2013, the government is also considering whether the following further changes to our current testing and review arrangements should be introduced:

- a. A requirement to demonstrate an adequate test of any off-site plan to the relevant regulator. If this change were to be adopted, supporting guidance in the Code of Practice would be produced to outline what the regulator deems to be an adequate test, proportionate to the nature of the risks identified in the plan.
- b. The ability for local authorities to request from operators the recovery of reasonable costs incurred by all responders required to participate in the preparation and testing of an off-site emergency plan, not just costs incurred in arranging for the emergency services to participate in the testing (as is currently the case). If this change were to be adopted, the Code of Practice would outline in further detail what the regulator considers to be appropriate to claim for, and the extent of costs that can be recovered.

136. The government recognises that a number of the proposed amendments detailed above are likely to have resource and cost implications, particularly for operators and local authorities. The government welcomes any evidence relating to such impacts.

Do you have views on how the HIRE process could be made more consistent and transparent (Article 98.1)?

Do you have any views or suggested improvements on the proposed amendments to testing arrangements (Article 98.4)?

98(5) *The emergency response plans shall, where appropriate, incorporate relevant elements of the emergency management system referred to in Article 97.*

137. This article is addressed through the transposition of Article 97(see above).

Article 99 – international cooperation

99(1) *Member States shall cooperate with other Member States and with third countries in addressing possible emergencies on its territory which may affect other Member States or third countries, in order to facilitate the organisation of radiological protection in those Member States or Third Countries.*

99(2) *Each Member State shall, in the event of an emergency, occurring on its territory or likely to have radiological consequences on its territory, promptly establish contact with all other Member States and with third countries which may be involved or are likely to be affected with a view to sharing the assessment of the exposure situation and coordinating protective measures and public information by using, as appropriate, bilateral or international information exchange and coordination systems. These coordination activities shall not prevent or delay any necessary actions to be taken on a national level.*

99(4) *Each Member State shall, where appropriate, cooperate with other Member States and with third countries in the transition from an emergency exposure situation to an existing exposure situation.*

138. The UK has a number of longstanding arrangements with member states, non-EU countries and international bodies that facilitate the sharing of information regarding the UK's emergency response framework and communications procedures in the event of an emergency.

139. These include UK registration on IAEA intranet platforms such as the IAEA USIE system, (Unified System for Information Exchange in Incidents and Emergencies), a web portal where member states can exchange urgent information during nuclear and radiological incidents and emergencies), and the Response and Assistance Network (RANET), a network for providing international assistance, upon request from an IAEA Member State, following a nuclear or radiological incident or emergency).

140. The UK is party to a number of intra-governmental Memorandum of Understanding (MOUs) and bilateral agreements with near neighbours. The agreements outline cooperation and arrangements during a nuclear or radiological emergency and legally require countries to cooperate with each other throughout the emergency situation. The UK has agreements in place with: Denmark, France, Ireland, Norway, Russia and the Netherlands. The government plans to review current arrangements and examine where additional agreements would be helpful.

141. The NEPRG Response Guidance and the NEPRG ConOps²⁹ set out the way in which the UK will respond to nuclear emergencies beyond its borders.

142. Article 99(4) links closely with Article 98(3). As discussed previously, REPIR does not include a provision for the transition from an emergency exposure situation to an existing exposure situation. This gap will be addressed by reflecting the BSSD article in the revised legislation. This, in conjunction with the UK's bilateral agreements with neighbouring countries and

²⁹ [https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/472419/NEPRG00 - Concept of Operations.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/472419/NEPRG00_-_Concept_of_Operations.pdf)

the administrative arrangements for international working, means that the UK can demonstrate compliance with this article.

143. Accordingly, the government considers that the current arrangements meet the requirements of Article 99 of the BSSD 2013 and does not plan to make any substantive changes to these arrangements in the new regulations and guidance.

99(3) Member States promptly share information and cooperate with other Member States and Third Countries regarding loss, theft or discovery of high-activity sealed sources.

144. This article is being addressed separately from this consultation as it does not relate to emergency preparedness and response.

Article 105 – enforcement

105. Member States shall ensure that the competent authority has the power to require any individual or legal person to take action to remedy deficiencies and prevent their recurrence or to withdraw, where appropriate, authorisation when the results of a regulatory inspection or another regulatory assessment indicate that the exposure situation is not in compliance with the provisions adopted pursuant to this Directive.

145. As both HSE and ONR have broad enforcement powers in relation to persons who fall within their regulatory remit, the government does not propose to make any substantive changes to the current enforcement in the new regulations and guidance.

Other amendments to REPPIR

146. Currently, regulation 2(2) of REPPIR excludes from the definition of carrier, for the purpose of the regulations, those who transport nuclear or radioactive material by road, rail, inland waterway, sea, air or pipeline (all normal means of transport). This means that, in practice, the emergency management system for transport is in fact delivered primarily by the CDGs.

147. The government has been unable to identify any circumstances in which nuclear or radioactive material would or could be transported by any means other than by road, rail, inland waterway, sea, air or pipeline. As such, the current provisions in REPPIR that apply to carriers do not appear to have any practical use or value.

148. The government therefore proposes to remove all references to carriers in the new regulations that will replace REPPIR. The emergency management system in relation to the transport of nuclear or radioactive material will be delivered through the CDGs and the emergency management system for sites (including transport of nuclear and radioactive material within sites) will be delivered through the regulations that replace REPPIR. It is hoped that this will make the regulatory framework for nuclear and radiological emergency planning much clearer for industry and emergency planners.

149. While this is likely to make the regulations that replace REPPIR appear to be quite different than they currently are, the government does not expect these changes to result in any real-world impacts. The government does want to draw it to the attention of stakeholders during this wider consultation, however.

Chapter 2 – Transport of radioactive materials

1. The text of the relevant emergency preparedness provisions of the BSSD 2013 that need to be implemented is set out in the blue boxes below. This is followed by the government's proposals for transposing the provision. Specific questions on which the government would like views from the public on are boxed at the end of this section and highlighted in bold and also in the list of consultation questions on page [12]. Where the government is proposing to make changes to the CDGs, we will to the extent possible take the opportunity to align the approach in the CDGs with the approach taken in the regulations that will replace REPPiR. The government hopes that this will help make the regulatory framework consistent and simpler for dutyholders.

2. The CDGs are the main regulations governing the transport of radioactive materials in Great Britain. As noted in Chapter 1, REPPiR previously applied to all carriers of significant quantities of radioactive material, but was subsequently amended to exclude those who transport nuclear or radioactive material by road, rail, inland waterway, sea, air or pipeline. This means that, in practice, the emergency management system for transport is in fact delivered primarily by the CDGs.

3. The CDGs regulate the transport of the vast majority of dangerous goods, but there are specific sections which deal with class 7 (radioactive materials). Regulation 24 of, and Schedule 2 to, the CDGs set out the current regulatory requirements in relation to preparing for and responding to nuclear and radiological emergencies which occur during the carriage of radioactive material. These regulations do not apply to the transport of radioactive materials for defence purposes.

4. The transport of radioactive material is also defined as a practice in the IRRs. As such, companies who transport radioactive materials must also comply with the relevant regulatory requirements for practices under the IRRs, in addition to the requirements of the CDGs.

5. At the international level, the UK is Party to the UN agreement *Accord européen relatif au transport international des marchandises dangereuses par route* (ADR), the inland waterway equivalent (ADN) and the rail equivalent (RID). These treaties set out the European regulatory framework for the transport of dangerous goods and are implemented domestically by the CDGs.

6. In addition, regulation 17 of REPPiR applies to all local authorities and requires them to prepare and supply information and advice relating to radiation emergencies. This regulation applies irrespective of how the emergency arises (this could include a transport emergency). Removing carriers from REPPiR will not affect this regulation.

7. The ONR regulates all civil transport of radioactive materials in GB. They have produced guidance on key aspects of the CDGs and ADR/RID to help dutyholders fulfil their duties. There is specific guidance on emergency arrangements. ONR works closely with the Defence Nuclear Safety Regulator (DNSR) in a process of joint regulation of relevant areas of Defence activities. DNSR is the Competent Authority for transport packages in the Defence Nuclear Programme (DNP) and interfaces as necessary with ONR's Radioactive Materials Transport Team and the Department for Transport.

8. The relevant provisions of the BSSD 2013 that we will be implementing are set out in detail below and relate to:

- 8.1. Definition of an Emergency;
- 8.2. Definition of Emergency Worker and prior information and training for emergency workers;
- 8.3. Reference levels;
- 8.4. Emergency response;

- 8.5. Provision of information to public likely to be affected;
- 8.6. Provision of information to public actually affected;
- 8.7. Emergency management system;
- 8.8. Emergency preparedness; and,
- 8.9. Enforcement.

Article 4 – definition of an Emergency

(26) "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;

9. The CDGs currently define a radiological emergency as “a situation arising during the course of the carriage of a consignment that requires urgent action in order to protect workers, members of the public or the population (either partially or as a whole) from exposure”. This is definition is broadly in line with the BSSD 2013, but it does not make specific mention of the environment or property. While it is hard to conceive of a situation in which the population could be protected from exposure without taking action to protect property or the environment, the government proposes to amend the CDGs so that the definition of a radiological emergency explicitly includes risks to quality of life, property and the environment.

10. The government is aware that the IAEA, in their General Safety Requirements, Part 7³⁰, uses a slightly different definition of nuclear or radiological emergency:

*“**emergency.** A non-routine situation or event that necessitates prompt action, primarily to mitigate a hazard or adverse consequences for human life, health, property or the environment. This includes nuclear and radiological emergencies and conventional emergencies such as fires, releases of hazardous chemicals, storms or earthquakes. This includes situations for which prompt action is warranted to mitigate the effects of a perceived hazard*

***nuclear or radiological emergency.** An emergency in which there is, or is perceived to be, a hazard due to:*

- (a) The energy resulting from a nuclear chain reaction or from the decay of the products of a chain reaction;*
- (b) Radiation exposure.”*

11. The government’s intention is to ensure the definition of emergency in the CDG is revised so it is equivalent in scope to the BSSD 2013 definition and also reflects the clarity of the IAEA definition. We also intend to align the definition with that used in the regulations that will replace REPPIR.

12. The government does not anticipate that the proposed changes will have much of an impact on dutyholders. From a practical perspective, the environment and property would already have to be considered for emergency preparedness, but this change makes that requirement explicit. Relevant ONR guidance³¹ also makes clear that plans should detail arrangements to

³⁰ http://www-pub.iaea.org/MTCD/Publications/PDF/P_1708_web.pdf

³¹ <http://www.onr.org.uk/transport/emergency-arrangements-guidance.pdf>

protect “the vehicle crew, the public, attending emergency services, and the environment when transporting radioactive material”.

Articles 4 and 17 – definition of Emergency Worker and prior information and training

4(31) "Emergency worker" means any person having a defined role in an emergency and who might be exposed to radiation while taking action in response to the emergency;

17(1) Member States shall ensure that emergency workers who are identified in an emergency response plan or management system are given adequate and regularly updated information on the health risks their intervention might involve and on the precautionary measures to be taken in such an event. This information shall take into account the range of potential emergencies and the type of intervention.

17(2) As soon as an emergency occurs, the information referred to in paragraph 1 shall be supplemented appropriately, having regard to the specific circumstances.

17(3) Member States shall ensure that the undertaking or the organisation responsible for the protection of emergency workers provides to emergency workers referred to in paragraph 1 appropriate training as provided for in the emergency management system set out in Article 97. Where appropriate, this training shall include practical exercises.

17(4) Member States shall ensure that, in addition to the emergency response training referred to in paragraph 3, the undertaking or the organisation responsible for the protection of emergency workers provides these workers with appropriate radiation protection training and information.

13. There is currently no specific definition of an emergency worker in the CDGs, the CCA 2004 or any other relevant UK law. In order to effectively transpose Article 17 (which requires prior information and training for emergency workers), the concept of an emergency worker needs to be added to the CDGs, and provision made to ensure that those emergency workers identified in an emergency response plan have their training and information about the risks they are taking regularly updated, supplemented appropriately according to the specific circumstances in the event of an emergency.

14. Currently, paragraphs 4 and 5 of Schedule 2 to the CDGs require the consignor and the carrier of radioactive materials to have a written emergency plan, and that the driver, the consignor and the carrier assist with the intervention in the event of a nuclear or radiological emergency. We propose that anyone in a plan with a role in providing this assistance will be included in the definition of an emergency worker for the purposes of the CDGs. The government considers that this would have a similar meaning to the current concept of intervention personnel.

15. The government's expectation is that all people who are involved in a response who may be exposed to radiation should have training proportionate to the consequence and likelihood of something happening and the skill required to perform that function. Therefore, carriers' employees must have the appropriate training to assist in the intervention beforehand and in the event of an emergency. The government does not anticipate that the proposed changes will have much of an impact on dutyholders, as ADR already requires training to make personnel aware of emergency response procedures.

Article 7 – Reference levels

7(1) Member States shall ensure that reference levels are established for emergency and existing exposure situations. Optimisation of protection shall give priority to exposures above the reference level and shall continue to be implemented below the reference level.

7(2) The values chosen for reference levels shall depend upon the type of exposure situation. The choices of reference levels shall take into account both radiological protection requirements and societal criteria. For public exposure the establishment of reference levels shall take into account the range of reference levels set out in Annex I.

Annex I: *“Without prejudice to reference levels set for equivalent doses, reference levels expressed in effective doses shall be set in the range of 1 to 20 mSv per year for existing exposure situations and 20 to 100 mSv (acute or annual) for emergency exposure situations.”*

16. As discussed in Chapter 1, reference levels are not at present a concept in the UK’s legislative or administrative arrangements, and there is currently no legislation requiring the establishment of reference levels in relation to emergency planning or response. In order to fulfil the requirements of Article 7 of the BSSD 2013, the government intends to establish a National Reference Level, and is working closely with PHE on this.

17. Paragraph 4 of Schedule 2 to the CDGs already requires emergency plans to have regard to dose limits set by PHE (referred to as the Health Protection Authority in the CDGs), so the government is minded to build on this so that plans also have regard to any National Reference Level. Guidance will be developed to support dutyholders in considering the National Reference Level when creating emergency plans in relation to the transport of radioactive material.

18. The government expects the impact of the introduction of reference levels to transport emergency plans to be less significant than on off-site plans around fixed sites. This is because reference levels aim to achieve an optimised response over all exposure pathways and countermeasures in the first year. Transport emergency plans are by design more concerned with the immediate response to an emergency and the handover to the lead agencies. Nonetheless, the RTA accompanying this consultation makes provision for familiarisation time which would include consideration of reference levels and associated guidance.

19. Article 7 also requires that established reference levels inform the optimisation of protection strategies in the event of an emergency. This is reiterated in Section B Annex XI. The government does not consider that there needs to be an addition made to the CDGs requiring the carrier and/or consignor to play a role in determining reference levels in an emergency or optimising the response in light of them. It would be for the agencies leading the response to establish reference levels.

Article 69 – emergency response

69(1) Member States shall require the undertaking to notify the competent authority immediately of any emergency in relation to the practices for which it is responsible and to take all appropriate action to reduce the consequences.

69(2) Member States shall ensure that, in the event of an emergency on their territory, the undertaking concerned makes an initial provisional assessment of the circumstances and consequences of the emergency and assists with protective measures.

20. In the event of an emergency, paragraph 2 of Schedule 2 to the CDGs already requires the driver (or the police, if the driver has failed to do so) to notify the carrier of an emergency (also

called a notifiable event). Having been informed of this, the carrier and consignor must inform ONR (also called the Competent Authority in this context).

21. The carrier and consignor must also “initiate the emergency arrangements in respect of any radiological emergency;” and “assist in the intervention”. ONR have produced supporting guidance³² which further advises on planning to prevent the situation from escalating, actions to protect the public, actions to protect the emergency services, actions to ensure the radioactive materials remain secure and actions to be taken by the consignor. Preventing the situation from escalating includes securing the radiation source and so protecting the environment from contamination. This is discussed further in the section relating to the transposition of Article 97(3).

22. Carriers also have a duty under paragraph 5 of Schedule 2 to the CDGs to arrange for the examination of the load to determine whether there has been any contamination. If there has been contamination, the carrier must arrange for the safe disposal of any part of the load that has been contaminated and for the decontamination of the transport unit or train. ONR guidance makes clear that plans should account for “how the driver will identify any potential damage to the package(s) including loss of shielding or leakage of the radioactive contents and what to do in such situations, when to use any protective equipment provided”.

69(3) Member States shall ensure that provision is made for protective measures with regard to:

- (a) The radiation source, to reduce or stop the radiation, including the release of radionuclides;*
- (b) The environment, to reduce the exposure to individuals resulting from radioactive substances through relevant pathways;*
- (c) Individuals, to reduce their exposure*

69(4) In the event of an emergency on or outside its territory, the Member State shall require:

- (a) The organisation of appropriate protective measures, taking account of the real characteristics of the emergency and in accordance with the optimised protection strategy as part of the emergency response plan, the elements to be included in an emergency response plan are indicated in Section B of Annex XI;*
- (b) The assessment and recording of the consequences of the emergency and of the effectiveness of the protective measures.*

69(5) The Member State shall, if the situation so requires, ensure that provision is made to organise the medical treatment of those affected.

23. As is set out in more detail in the section on Article 97, the current emergency management system for transport emergencies consists of several layers of risk assessment and response capabilities. The government considers that these capabilities largely ensure that provision is made for appropriate protective measures as required by Article 69(3) and (4).

24. Under the current arrangements, Category 1 responders (police, fire and rescue and local authorities) are required, under the CCA 2004, to assess the risks of emergencies occurring and to use this assessment to inform contingency planning. This includes the risk of nuclear or radiological emergencies occurring during transport. Where ONR have deemed that the public are likely to be affected by a nuclear or radiological emergency in accordance with paragraph 5 of Schedule 2 to the CDGs, the government would expect this information to be taken into account

³² <http://www.onr.org.uk/transport/emergency-arrangements-guidance.pdf>

as part of the local authority's wider risk assessment and preparedness work. The government is considering amending the CDGs to require the specified information to be provided to all category 1 responders and not just the local authority.

25. The fire and rescue authorities are expressly required by the Fire and Rescue Services (Emergencies) Order 2007³³ and (The Fire (Additional Function) (Scotland) Order 2005 in Scotland)³⁴ to maintain resources to respond to nuclear or radiological transport emergencies. Fire and rescue authorities are also required to respond to requests for specialist personnel or equipment in the event of an emergency from another fire and rescue authority. This is a key national capability relevant to transport emergencies involving nuclear or radioactive materials. There is operational guidance provided by the Department for Communities and Local Government (DCLG) to support fire and rescue authorities in meeting this requirement³⁵.

26. These requirements ensure that the necessary people, services and equipment are available to respond to nuclear or radiological transport emergencies and put in place appropriate protective measures.

27. In the event of a transport emergency, the carrier and consignor are required by paragraph 5 of Schedule 2 to the CDGs to immediately notify the police and, where appropriate, the fire and rescue authorities. The police, once notified of an incident, can decide if appropriate to implement local response arrangements including standing up the Strategic Coordinating Group if necessary to coordinate multi-agency response. The carrier and consignor are also required to assist with the intervention as set out above.

28. The table below sets out how the specific elements required of the emergency response plan are, or are proposed to be, met.

Table 5 – Section B Annex XII requirements compared with relevant UK legislation, guidance or administrative arrangements

Section B, Annex XII BSSD 2013	How the UK meets, proposes to meet, the Section B, Annex XII BSSD 2013 requirement
Reference levels for public exposure, taking into account the criteria laid down in Annex I.	See discussion on Article 7 above.
Reference levels for emergency occupational exposure taking into account Article 53.	An employee is already permitted under the CDG 2009 (with reference to IRR 1999) to be exposed to higher levels of radiation in the event of an emergency and according to certain other conditions. In line with BSSD Article 53 2(b), the limit for exposure of an emergency worker will be set at 500mSv. See separate section on Emergency Workers (Article 4).
Optimised protection strategies for members of the public who may be exposed, for different postulated events and related scenarios.	The transport plans required by paragraph 4 of Schedule 2 to the CDGs must, in accordance with existing ONR guidance, be written with the aim of minimising exposure and preventing the situation getting worse. See also the section on Article 97(3) below.
Predefined generic criteria for particular protective measures.	Paragraph 4 of Schedule 2 to the CDGs already requires emergency plans to have regard to dose limits set by HSE. In the event of an emergency, the carrier is required to assist with the

³³ http://www.legislation.gov.uk/ukxi/2007/735/pdfs/ukxi_20070735_en.pdf

³⁴ <http://www.legislation.gov.uk/ssi/2005/342/article/3/made>

³⁵ <https://www.gov.uk/government/publications/hazardous-materials-operational-guidance-for-the-fire-and-rescue-service>

	intervention, which would include advising the emergency services on the protective measures required. DCLG provides operational guidance for fire and rescue authorities; this includes establishing a cordon to pre-defined generic distances. ³⁶
Default triggers or operational criteria such as observables and indicators of on-scene conditions.	The ERLs discussed above can be used as a reference point in a response. The relevant local authority, PHE, NHS primary care trusts, ambulance services, police constabularies and fire and rescue services will consider ERLs – supplemented by other indicators – to determine the optimal response in the event of an emergency.
Arrangements for prompt coordination between organisations having a role in emergency preparedness and response and with all other member states and with third countries which may be involved or are likely to be affected.	Paragraph 5 of Schedule 2 to the CDGs currently requires the consignor and carrier to notify the relevant agencies and to assist with the first phase of the response. See wider discussion on the UK’s national level emergency response arrangements in Article 69.4 in Chapter 1 of this consultation.
Arrangements for the emergency response plan to be reviewed and revised to take account of changes or lessons learned from exercises and events.	Paragraph 7 of Schedule 2 to the CDGs requires that plans should be reviewed, revised and tested at suitable intervals. ONR supporting guidance ³⁷ provides more advice on factors to consider when testing emergency plans. This states that a record should be made when testing that includes any learning points identified and that the plan should subsequently be reviewed and updated if required to reflect this experience, with all relevant people being advised of any changes to the plan as these occur.
Arrangements shall be established in advance to revise these elements, as appropriate, during an emergency exposure situation, to accommodate the prevailing conditions as these evolve throughout the response.	In line with local response arrangements required by the CCA 2004, the police will lead the response and can decide to implement generic emergency response arrangements (Strategic Coordinating Group) if necessary to coordinate multi-agency response. This Strategic Coordinating Group would coordinate the response and revise to accommodate the prevailing conditions as these evolve throughout the response.
Promptly implementing protective measures, if possible, before any exposure occurs.	Existing ONR guidance makes clear that minimising exposure and preventing the situation getting worse is what plans should focus on achieving. To make this clearer, we will seek to align regulations in this area for fixed sites and transport. See discussion on 97(3) in Chapter 1 of this consultation.
Assessing the effectiveness of strategies and implemented actions and adjusting them as appropriate to the prevailing situation.	In line with local response arrangements required by the CCA 2004, the police will lead the response and could set up a Strategic Coordinating Group to consider these questions.
Comparing the doses against the applicable reference level, focusing on those groups whose doses exceed the reference level.	In line with local response arrangements required by the CCA 2004, the Strategic Coordinating Group, once set up, or the Strategic Recovery Group, would consider these questions in the event of a very serious transport emergency with long-term

³⁶ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/15020/GRA_Hazmatt_Manual_COMBINED.pdf

³⁷ <http://www.onr.org.uk/transport/emergency-arrangements-guidance.pdf>

	consequences. PHE would advise on doses through the Scientific Technical Advisory Cell ³⁸ .
Implementing further protection strategies, as necessary, based on prevailing conditions and available information.	In line with local response arrangements required by the CCA 2004, the Strategic Coordinating Group, once set up would consider these questions in the event of a very serious transport emergency with long-term consequences.

29. See the section on Article 97(3) of the BSSD 2013 below for discussion on the government's proposal to implement the requirements of Article 69(4) of the BSSD 2013.

30. The Ambulance Service has pre-determined roles and responsibilities in the event of a nuclear emergency that include: liaising with other emergency services, providing and updating situational reports to ambulance control, establishing locations for ambulance control and casualty clearing stations, and providing on-scene direction on casualty triage, extrication, stabilisation, clinical intervention and transport to appropriate hospitals. More details can be found in the NEPRG – Response Chapter.

31. Public monitoring would also be carried out by the NHS. PHE have produced guidance for the establishment of Radiation Monitoring Units (RMUs) to undertake radiation monitoring of the public³⁹. An RMU is used to determine levels of radioactive contamination in or on people and any subsequent requirement for decontamination. It will also inform decisions on the need for any medical interventions for persons contaminated with radioactive materials.

32. Accordingly, subject to the changes proposed above, the government considers that the current arrangements meet the requirements of Article 69 of the BSSD 2013 and does not plan to make any substantive changes to these arrangements.

Article 70 – provision of information to public likely to be affected

70(1) Member States shall ensure that the members of the public likely to be affected in the event of an emergency are given information about the health protection measures applicable to them and about the action they should take in the event of such an emergency.

70(2) The information supplied shall include at least the elements set out in Section A of Annex XII.

70(3) The information shall be communicated to the members of the public referred to in paragraph 1 without any request being made.

70(4) Member States shall ensure that the information is updated and distributed at regular intervals and whenever significant changes take place. This information shall be permanently available to the public.

33. The provision of information to the public is required by paragraph 2 of Schedule 2 to the CDGs where ONR considers the public are likely to be affected by a radiation emergency. In such circumstances, the carriers and consignees must provide the public (without their having to request it) the following: the basic facts about the radioactivity; the various types of emergency possible and their consequences for the public and the environment; the emergency measures envisaged to alert, protect and assist the general public; and the appropriate information on

³⁸ <https://www.gov.uk/government/publications/provision-of-scientific-and-technical-advice-in-the-strategic-co-ordination-centre-guidance-to-local-responders>

³⁹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/340153/HPA-CRCE-017_for_website.pdf

actions to be taken by the public. This list covers all the requirements of Section A of BSSD Schedule XII.

34. Paragraph 2 of Schedule 2 to the CDGs also requires that the information is updated regularly and that the carrier and consignee liaise with ONR and the local authority in producing and distributing the information.

35. Accordingly, the government considers that the current arrangements meet the requirements of Article 70 of the BSSD 2013 in relation to transport emergencies and does not plan to make any substantive changes to these arrangements.

36. Ensuring that affected members of the public are provided with information and advice in the event of an emergency is currently provided for in regulation 17 of REPIR which requires the local authority to supply information to affected members howsoever that emergency may arise. This would include a transport emergency. The information to be supplied in Schedule 10 to REPIR includes, but is not limited to: information on the type of emergency that has occurred and advice on health protection measures. The government does not consider there are any gaps in legislation with regards to this article. Section B of Annex XII of the BSSD 2013 requires largely the same information to be provided. See the section on Article 71 in Chapter 1 of this consultation for more detail.

Article 97 – emergency management system

97(1) Member States shall ensure that account is taken of the fact that emergencies may occur on their territory and that they may be affected by emergencies occurring outside their territory. Member States shall establish an emergency management system and adequate administrative provisions to maintain such a system. The emergency management system shall include the elements listed in Section A of Annex XI.

37. The detail of the current emergency management system for nuclear or radiological transport emergencies is set out in Table 6 below. The government considers that the current arrangements meet the requirements of Article 97(1) of the BSSD 2013 in relation to transport emergencies and does not plan to make any substantive changes to these arrangements.

Table 6 – Section A Annex XI – Elements to be included in an emergency response plan and GB arrangements.

Section A Annex XI BSSD 2013	How the UK meets, or will meet, the BSSD requirement
Assessment of potential emergency exposure situations and associated public and emergency occupational exposures.	Regulation 7 of the IRR 1999 requires a prior risk assessment to be conducted before commencing any work that involves ionising radiation. This includes any transportation of radioactive materials.
Clear allocation of the responsibilities of persons and organisations having a role in preparedness and response arrangements.	The transport plans required by paragraph 4 of Schedule 2 to the CDGs must, in accordance with existing ONR guidance ⁴⁰ on emergency arrangements, ensure that “training should be delivered to ensure that each person with a role in the emergency plan understands their duties in the event that the plan needs to be

⁴⁰ <http://www.onr.org.uk/transport/emergency-arrangements-guidance.pdf>

	used, and has ready access to that plan”.
Establishment of emergency response plans at appropriate levels and related to a specific facility or human activity.	The transport plans required by paragraph 4 of Schedule 2 to the CDGs must be developed as is appropriate to the carriage of a package. The appropriateness of the plan should be informed by the prior risk assessment carried out in accordance with the IRRs.
Reliable communications and efficient and effective arrangements for cooperation and coordination at the installation and at appropriate national and international levels.	Paragraph 5 of Schedule 2 to the CDGs requires the notification of the police, emergency services and Competent Authority (in this context ONR).
Health protection of emergency workers.	ADR chapter 1.3 requires that employees shall be trained prior to assuming responsibilities of the carriage and that training shall aim to make personnel aware of the safe handling and emergency response procedures.
Arrangements for the provision of prior information and training for emergency workers and all other persons with duties or responsibilities in emergency response, including regular exercises.	In addition to the above, paragraph 7 of Schedule 2 to the CDGs requires that plans are tested at suitable intervals.
Arrangements for individual monitoring or assessment of individual doses of emergency workers and the recording of doses.	Paragraph 3(1) of Schedule 2 to the CDGs requires that any employee who assists in an intervention and is subject to an emergency exposure should be monitored according the requirements set out in the IRRs.
Public information arrangements.	See discussion of Article 70 above.
Involvement of stakeholders.	Where the ONR considers it proportionate, the CDGs requires that carriers or consignors supply information to the public about the measures envisaged to protect the public in the event of an emergency. The carrier or consignor should arrange with the local authority for this sharing of information.
Transition from an emergency exposure situation to an existing exposure situation including recovery and remediation.	See discussion of Article 98(3) below.

97(2) The emergency management system shall be designed to be commensurate with the results of an assessment of potential emergency exposure situations and to be able to respond effectively to emergency exposure situations in connection with practices or unforeseen events.

38. There are two key components to this article. Member states must ensure that their emergency management system is commensurate with the results of an assessment of potential emergency exposure situations. In addition to this, member states should ensure that the emergency management system is sufficiently flexible to respond effectively to unforeseen events.

39. Regulation 7 of the IRRs requires dutyholders to conduct a prior risk assessment before commencing any work – including any transportation of radioactive materials – that involves ionising radiation. This assessment should ensure that “all hazards with the potential to cause a radiation accident have been identified; and that the nature and magnitude of the risks to

employees and other persons arising from those hazards have been evaluated.” Where this assessment identifies a potential radiation accident, the dutyholder is responsible for taking all reasonably practicable steps to prevent the accident, limit any consequences if one were to occur, and provide employees with adequate information, training and equipment to restrict their risk of exposure. This risk assessment should then be used to inform what level of emergency planning is appropriate – paragraph 4 of Schedule 2 to the CDGs requires that an emergency plan must be developed as is appropriate to the carriage of a package.

40. Packaging requirements support this risk assessment as they act as a commensurate control on the risk posed by radioactive materials. There are limits on the material and quantity as defined for each package type in the Regulations for the Safe Transport of Radioactive Material (SSR-6⁴¹), which is referred to in ADR. The more hazardous the material, the lower the limit. In addition, there are requirements to test the packaging. ADR (Chapter 6.4) describes the robust testing procedures for assessing the suitability of transport packaging. This chapter details the level of resilience required, according to material type, as well as the test that must be conducted to demonstrate the packaging ability to withstand certain scenarios (normal conditions of carriage and accident conditions in carriage). The process of optimal package selection is further clarified in the IAEA, Safety in Transport guidance.

41. For more severe and/or unforeseen emergencies, the national capabilities detailed in the section on Article 69 enable an effective response. In particular, the UK’s emergency services are required to make provision in their area for responding to radioactive emergencies⁴². This is not limited to areas around nuclear sites. They are also required to respond to radioactive emergencies outside of their local area upon request from another fire and rescue authority.

42. In addition, some organisations involved in the transport of radioactive materials are members of RADS SAFE⁴³, an organisation of consignors and carriers that commit to respond in the event of a transport emergency involving radioactive materials. This provides expert advice quickly, in the event of a transport accident, to advise the emergency services. The National Arrangements for Incidents Involving Radioactivity (NAIR)⁴⁴ also provide assistance to emergency services in the event of a transport emergency where no radiation expert is otherwise available or the consignor is unknown.

43. Given the layers of risk assessment and response capabilities for transport which cover more and less likely emergencies with more and less severe impacts, the government considers that the current arrangements meet the requirements of Article 97(2) of the BSSD 2013 in relation to transport emergencies and does not plan to make any substantive changes to these arrangements.

97.3 The emergency management system shall provide for the establishment of emergency response plans with the objective of avoiding tissue reactions leading to severe deterministic effects in any individual from the affected population and reducing the risk of stochastic effects, taking account of the general principles of radiation protection and the reference levels referred to in Chapter III [Article 5 a) Justification, b) Optimisation, c) Dose limitation and reference levels].

44. Paragraph 4 of Schedule 2 to the CDGs sets out the principles that an emergency plan must be prepared with regards to. In addition to requirements to take account of dose limits, these currently include:

⁴¹ http://www-pub.iaea.org/MTCD/publications/PDF/Pub1570_web.pdf

⁴² http://www.legislation.gov.uk/uksi/2007/735/pdfs/uksi_20070735_en.pdf

⁴³ <https://www.radsafe.org.uk/>

⁴⁴ <https://www.gov.uk/guidance/national-arrangements-for-incidents-involving-radioactivity-nair>

“(a) The principle that intervention is to be undertaken only if the damage due to the radiation resulting from the radiation emergency is sufficient to justify the potential harm and the potential cost (including the social cost) of that intervention;

(b) The principle that the form, scale and duration of the intervention should ensure that the benefit to health will be greater than any harm that might be associated with the intervention itself;”

45. These principles reflect the previous BSSD 1996 and, in the government’s view, need to be updated to reflect the requirements of Articles 69 and 97(3) of the BSSD 2013. Such changes could include:

- Making provision equivalent to that currently found in regulation 13(3)(b) of REPIR requiring that, in the event of an emergency, the carrier and consignor must make a full assessment of the consequences of the emergency and the effectiveness of the plan in responding to it;
- Explicitly providing that plans should be designed to reduce or stop the radiation, including the release of radionuclides, to reduce the exposure to individuals resulting from radioactive substances through relevant pathways and to reduce the exposure of individuals to radiation;
- Explicitly specifying that avoiding tissue reactions leading to severe deterministic effects in any individual from the affected population and reducing the risk of stochastic effects is an objective of emergency plans;
- Explicitly requiring plans to take account of reference levels;
- Explicitly requiring plans to be designed to be commensurate with the results of an assessment of potential emergency exposure situations.

46. The government will seek, to the extent possible, to align the revised principles for intervention in the CDGs with the related, revised provisions in the regulations that will replace REPIR. See the discussion in the section on Article 97.3 in Chapter 1 of this consultation.

47. Existing ONR guidance⁴⁵ already reflects this prioritisation of minimising exposure and preventing the situation getting worse. This means the nature of planning should not change significantly for carriers or consignors but the regulations will be amended to reflect the changes above. The government therefore does not anticipate that the proposed changes set out above are likely to have a significant impact on dutyholders.

48. The government considers that the need to consider justification, optimisation and dose limitation within the emergency plan are already met by paragraphs 3 and 4 of Schedule 2 to the CDGs and does not plan to make any substantive changes to these arrangements.

Article 98 – emergency preparedness

98(1) Member States shall ensure that emergency response plans are established in advance for the various types of emergencies identified by an assessment of potential emergency exposure situations.

49. The prior risk assessment required by regulation 7 of the IRRs must take into account “all hazards with the potential to cause a radiation accident... the nature and magnitude of the risks to employees and other persons arising from those hazards have been evaluated.” This then feeds through into the assessment of what level and kind of planning is appropriate.

⁴⁵ <http://www.onr.org.uk/transport/emergency-arrangements-guidance.pdf>

50. The government considers that the prior risk assessment in the IRRs meets the requirement of Article 98, but is of the view that further clarity might be useful to dutyholders. The government is therefore minded to explicitly link the risk assessment made under the IRRs to the transport plan made under the CDGs.

98(2) The emergency response plans shall include the elements defined in Section B of Annex XI.

51. See the section on Article 69 above for a discussion of this in relation to transport.

98(3) The emergency response plans shall also include provision for the transition from an emergency exposure situation to an existing exposure situation.

52. Article 98(3) of the BSSD 2013 introduces the requirement for emergency plans to include a provision for the transition from an emergency exposure situation to an existing exposure situation. The transition to recovery from a transport emergency will be determined by the agencies (policy, fire, local authority) leading the response and not by the carrier or consignor. This will be done according to CCA responsibilities for category 1 responders and extensive related administrative arrangements and guidance.

53. Nonetheless, the government proposes to make a small amendment to the CDGs requiring carriers to make provision for this in their plans. As they will not be leading the transition, they will be required to plan to support this transition, rather than facilitate it. They should do this by sharing relevant information via a handover report – in a sensible format – to pass on their assessment of the area in which the incident has occurred, highlighting any risk of environmental contamination. This would be a minor addition to the existing requirement to examine the load to determine whether contamination has arisen. If this assessment highlights a risk of environmental contamination that the emergency response is unlikely to address, the carrier should ensure through this report to the local authority, that they are aware of the situation and prognosis.

54. It is expected that this will not create a significant additional burden for carriers at the planning stage. The plan would simply make clear that what the assessment should include and how it should be shared with the relevant authorities. The costs associated with adding this to plans are discussed in the accompanying RTA.

98(4) Member States shall ensure that emergency response plans are tested, reviewed and, as appropriate, revised at regular intervals, taking into account lessons learned from past emergency exposure situations and taking into account the results of the participation in emergency exercises at national and international level.

55. Paragraph 7 of Schedule 2 to the CDGs requires that a plan must be reviewed whenever necessary, revised, and tested at suitable intervals. ONR can request a test, rehearsal or revision of any emergency arrangements they deem necessary. ONR supporting guidance⁴⁶ provides more advice on factors to consider when testing emergency plans. This states that a record should be made when testing that includes any learning points identified and that the plan should subsequently be reviewed and updated, if required, to reflect this experience, with all relevant people being advised of any changes to the plan as these occur.

⁴⁶ <http://www.onr.org.uk/transport/emergency-arrangements-guidance.pdf>

56. In addition, as carriages must be in accordance with the ADR or RID, and these are revised and reissued from time to time, the carriers and consignors referring to the CDGs are continually incorporating international best practice.

57. Accordingly, the government considers that the current arrangements meet the requirements of Article 98(4) of the BSSD 2013 in relation to transport emergencies and does not plan to make any substantive changes to these arrangements.

98(5) The emergency response plans shall, where appropriate, incorporate relevant elements of the emergency management system referred to in Article 97.

58. See the section on Article 97(3(1) for a discussion on how the requirements to make a transport plan are proposed to be amended to incorporate elements of the emergency management system.

Article 105 – enforcement

Member States shall ensure that the competent authority has the power to require any individual or legal person to take action to remedy deficiencies and prevent their recurrence or to withdraw, where appropriate, authorisation when the results of a regulatory inspection or another regulatory assessment indicate that the exposure situation is not in compliance with the provisions adopted pursuant to this Directive.

59. The regulations that need to be capable of enforcement in order for article 105 of the BSSD 2013 to be complied with in relation to transport are the CDGs and the IRRs.

- a. ONR are the enforcing authority for the CDGs in so far as they relate to the transport of nuclear or radioactive material and have a broad range of powers to do so. Accordingly, the government does not plan to make any substantive changes to these arrangements.
- b. In relation to the IRRs, there is an unusual situation where ONR does not have responsibility for enforcing the IRRs in relation to prior risk assessments made for transport practices. HSE have the power to enforce the IRRs for this purpose. Given the key role that such prior risk assessments play in the emergency management system for transport emergencies, the government intends to rectify this anomaly to ensure that ONR has the powers it needs to take action to remedy deficiencies and prevent their recurrence when the results of a regulatory inspection or another regulatory assessment indicate that a prior risk assessment is not in compliance with the requirements of the relevant regulations.

With regard to the proposed amendments to the CDG and accompanying Regulatory Triage Assessment, do you have any views or suggested improvements? If so, please use evidence to support your answer.

Transport and the graded approach

60. HSE have consulted separately on the introduction of a graded approach to regulation in the Ionising Radiations Regulations (the IRRs apply to transport). This approach to regulatory control comprises of informing the Competent Authority (ONR for transport) about work with ionising radiation and appropriate inspections commensurate with the magnitude and likelihood of

exposures resulting from the practice. There are three tiers: notification (for practices with the least risk), registration, and licensing (for practices with the highest risks).

61. HSE and the ONR will implement the graded approach in a way that maintains health and safety standards, while minimising the costs to business and any requirements that go beyond the scope of the Directive. In practice, this means that HSE or ONR will only request necessary information and will focus inspections and other interventions on highest-risk practices. Thus, more information will be required for the higher-risk practices than lower-risk practices. The information will be sufficient to demonstrate compliance with the Directive requirements while also providing information on risk profiles to inform ONR's risk-based inspection programme for transport.

Annex: How this could work in practice

1. This section is to help inform responses to the proposed approach to transposition as we recognise that consultees will want to understand what the government's proposals, if implemented, might look like.

Whether the new regulations apply

2. The current definition of an emergency in REPIR (and its link to the 5mSv trigger dose) plays a role in determining which sites are subject to the emergency planning requirements in REPIR. Only those sites which demonstrate (through a hazard identification and risk evaluation process) that an off-site release above this 5mSv threshold is reasonably foreseeable have to comply with those requirements. The drawbacks of this approach are discussed earlier. The government proposes to take a less binary approach to the application of the emergency preparedness requirements in the new regulations, but recognises the benefits of prioritising preparedness activities around those sites with the highest hazard.

3. Schedule 2 of REPIR currently lists quantities of radionuclides and any site that holds an amount of radionuclides in excess of that quantity falls within the scope of REPIR. The government envisages taking a similar approach in the new regulations although quantities will be updated by PHE in line with the 1mSv lower threshold. This would mean that the lowest-risk sites (which have not been assessed to have a postulated emergency above 1mSv) will not be in the scope of the new regulations (although such sites would still need to do the contingency planning required by the IRRs).

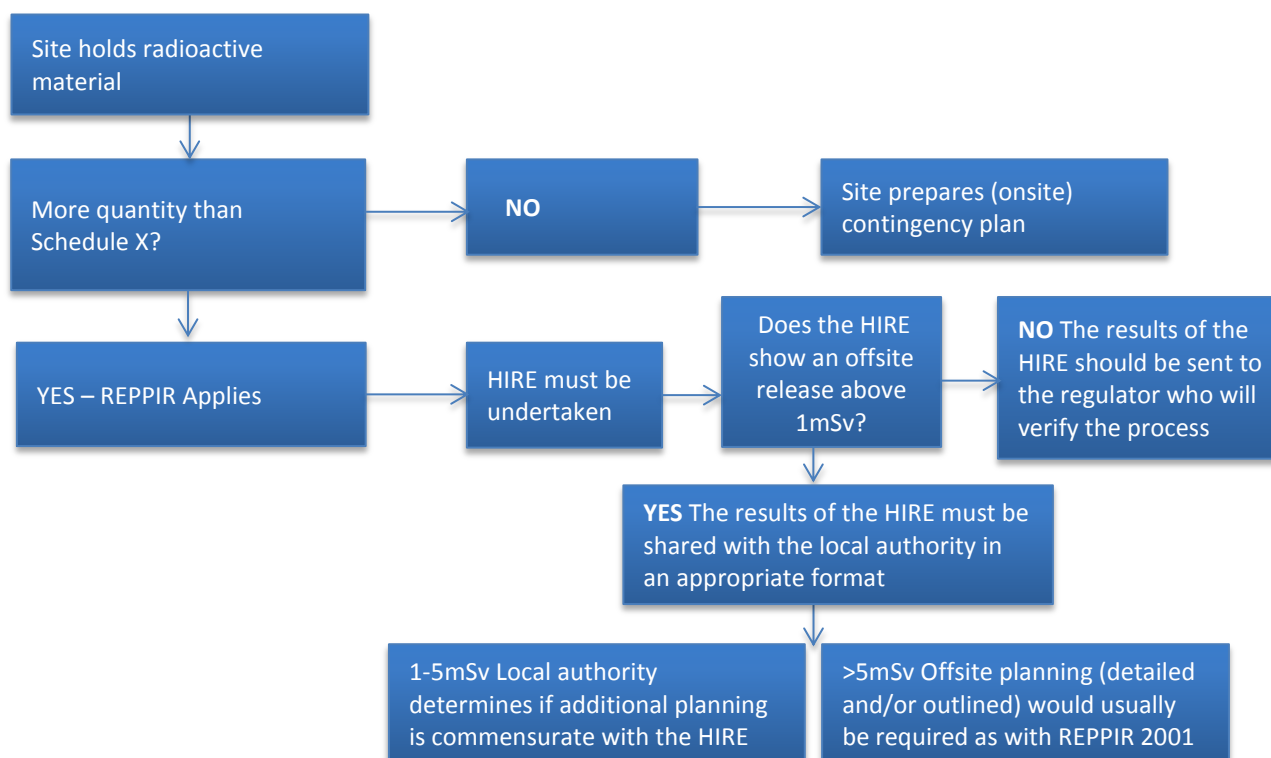
4. It is hoped that this system will remain relatively straightforward for dutyholders to use, as they will still be able to refer to these inventory numbers in a Schedule to the regulations to ascertain whether the regulations apply to them.

5. All sites which have holdings in excess of the new Schedule 2 values, which relate very conservatively to the potential for a dose in excess of 1mSv/y, will fall within the scope of the new regulations. For sites with a postulated off-site release between 1mSv and the current REPIR trigger dose of 5mSv, the government would expect that, as a minimum, under the proposed system, they would need to share information about their hazards and potential consequences that could arise relating to their site with their local authority. The government estimates (based on the numbers of HIREs that are currently received) that of the approximately 30,000 sites in GB dealing with ionising radiation, perhaps 60 sites might have a postulated off-site release between 1mSv and 5mSv. Although revisions to Schedule 2 values could change this number, the expectation is this will not be a significant change.

6. Whether any and, if so, what kind of specific nuclear or radiological emergency preparedness might then be required would be a decision for the local authority (although the decision would be subject to oversight by ONR or HSE). The local authority would base its decision on risks identified in the report from the operator and their own knowledge of existing, local capabilities. Guidance from the regulators in the Code of Practice will inform and support this decision making. The government anticipates that proportionate planning for this type of site could be very light touch. For example, for a site that could give rise to less severe radiation emergencies a proportionate outline plan might primarily be focused on a communications strategy to reassure the local population.

7. Sites that have a postulated off-site release at or above the current REPIR trigger dose of 5mSv will remain within scope of the new regulations, and such sites will continue to need an off-site plan.

8. The proposed prioritisation of sites is illustrated in the schematic below.



9. The government would like to see the criteria and methodology on which off-site planning is based to be standardised, transparent and for the outputs to be accessible to planners in local authorities. In particular, the calculation of offsite public health consequences is going to be standardised and the outputs for local authorities made more accessible. Accordingly it proposes that a common assessment methodology to determine off-site planning distances will be introduced and placed into the Code of Practice that is currently under development.

10. PHE are developing consequence assessment methodologies to determine off-site planning distances. Under these methodologies, the HIRE will provide the inputs and evidence base. The outputs will underpin decisions on the need for off-site planning and/or the extent of emergency planning boundaries. This should ensure a consistent, transparent approach and lead to default parameters for off-site planning, including advice on how the methodologies can be varied for different circumstances relevant to specific sites (see Article 98). All such methodologies are intended to be commensurate in their complexity with the stages of the assessment.

Detailed planning

11. Under the government’s proposed system, local authorities will receive information on the potential consequences of an emergency from the site(s) in their area and will maintain responsibility for developing and owning the off-site plan in response. The local authority will be presented with information in a suitable level of detail to help it inform its proposal for the detailed emergency planning zone. This should be based on a wide range of considerations as well as the technical information on consequences and the hazard provided by the operator. The plan should be informed by local geography and demographics, so that, for example, neighbouring houses are not subject to very different countermeasures (unless there is a good reason) and the needs of any particularly vulnerable groups near to the site are appropriately planned for. It should also take

into consideration practical implementation factors and the benefits and risks of specific countermeasures in the context of local factors.

12. The relevant regulator will have oversight of the whole process including the technical assessment by the operator and the final detailed emergency planning zone boundary.

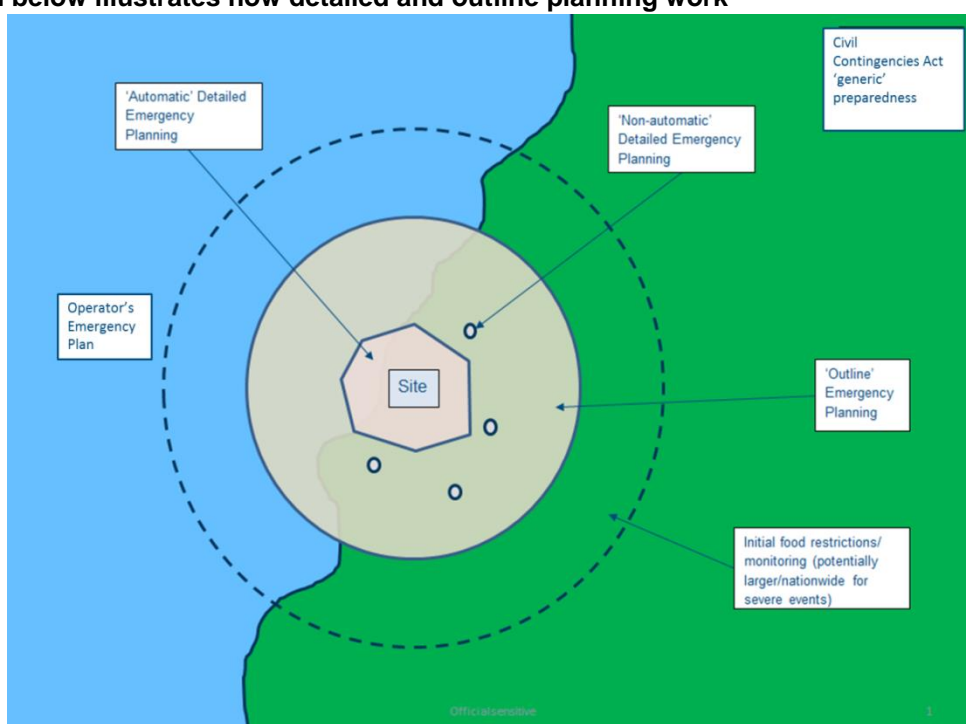
Outline planning

13. To provide additional certainty over what outline planning means for sites, local responders and the general public, the government proposes implementing default outline planning zones. It would be disproportionate to require the same amount of planning for a low-hazard facility which holds a small amount of radioactive material in stable form as for a complex facility which holds very significant amounts of radioactive materials in a less stable form. Consequently, the government proposes to group facilities together, according to their broad risk profiles and identify default maximum planning distances for each category, commensurate with that risk profile. These distances will cap how far from the site local authorities must consider outline planning. Distances are currently under development and will be based on PHE modelling and advice.

14. Both detailed and outline planning should involve the same types of response activity. For example, both will be expected to build/have arrangements for the same protective actions: sheltering, evacuation, stable iodine, food monitoring, etc. The government does not expect outline planning to necessarily involve the same level of detail for each response activity it would expect to see in detailed planning, and considers it should where possible draw on generic capabilities required for other emergencies, for example evacuation for flooding.

15. The government considers a key difference to be that detailed response arrangements need to enable the fast implementation of pre-planned public protection measures, with very little decision-making. Outline response arrangements, on the other hand, are intended to be able to respond to the particular characteristics of an emergency and so may take longer to decide and implement. Communications for example could be very quick within the outline planning zones, but other capabilities, such as contamination control measures, could take longer and may be dictated by hazard prognosis assessments produced by technical agencies which will estimate where the effects are most likely to be felt and their severity.

The diagram below illustrates how detailed and outline planning work



16. The government expects that local responders would normally plan (in outline) to the default distances according to their site category, and that sites and local authorities would normally accept these distances.

17. However, under the proposed system, operators would also have the opportunity to make a case to the regulator for smaller outline planning zones, should they believe it appropriate. The proposed high-level process for agreeing non-default outline planning is as follows:

- The operator undertakes the HIRE assessment. After considering the full range of potential emergencies (including events of very low probability not considered in the design and those that assume complete/multiple failure of safety features), the operator could choose to demonstrate that modelling outputs (and potential countermeasure zones) for their full range of potential emergencies appear to justify a smaller planning zone than the default zone. PHE standardised dose-assessment methodology and thresholds would need to be used for this.
- This information would then be shared with all local authorities that would fall within the default planning zone. The information would need to be provided in a clear, easy-to-understand format to enable local authorities to make proportionate planning decisions. This may need to be simpler in some cases than the Reports of Assessments currently produced by operators.
- Local authorities and the operator would discuss and determine the maximum distance where there could be consequences requiring protective actions focused on delivery of countermeasures. This distance would form the proposed new planning zone distance.
- The lead local authority and operator would then submit a joint case to the regulator proposing this new outline planning zone distance. The lead local authority would be the one where the site/facility is located and, as such, would need to coordinate with other local authorities within the planning zone to produce an off-site plan.
- The regulator would then assess the case and as appropriate:
 - Approve and endorse it, or
 - Request further information, or
 - Approve a modified version, or
 - Reject the case, requiring the default planning zone to be used instead.

18. Should there be any disagreement between the operator and local authorities on the appropriate planning distance, each would be able to make a case to the regulator who would then arbitrate as necessary.

Commensurate, outcome-focused planning

19. Under the government's proposals, using the risk profile information provided by the operator, the local authority must satisfy the regulator that the detail to which it intends to plan within the agreed planning zones offers protection to the public (and environment and property) commensurate to the identified risks.

20. Local authorities would be expected to plan in detail within the detailed planning area, and outline plan in the remainder of the zone. However, the approach is also intended to be outcome-focused; the government expects the regulator to require local authorities to demonstrate that they have put in place planning that is proportionate to the risk, thus offering protection to the public in the event of any one of the full range of nuclear emergencies, including unforeseen events.

21. This should give the local authority the flexibility and responsibility to design a plan to fit local circumstances, and should mean that it can create more detailed plans for parts of the outline emergency planning zone in line with new guidance where it would be commensurate to the identified risks to do so.

22. In deciding what level of planning is commensurate within the agreed outline planning zone, the government would expect local authorities to consider a range of planning principles, including: consequence; the benefit of protective actions; the difficulty of implementing protective actions (with more effort put into planning protective actions that are difficult to implement, particularly if the benefit they offer is significant); and other relevant factors (for example, particular local circumstances).

23. The government considers that determining protective measures should be based on consideration of the likelihood of the measure being needed and the difficulty of implementing it, with more planning being undertaken for those protective measures that are likely to be needed and difficult to implement. For example, a greater degree of pre-planning would be necessary if there was the possibility that a hospital would need to be evacuated than for access along a particular road to be prevented. Large-scale evacuation may be considered not appropriate in certain circumstances and this will need to be factored in plans. This would mean that planning for different sites will not necessarily be uniform in detail, but will vary according to the particular needs and circumstances of each site.

The distribution and use of stable iodine in emergency planning zones

24. The use of stable iodine is a key countermeasure in a nuclear or radiological emergency at operating nuclear reactors. For these, radiation emergencies, stable iodine tablets provide an extremely important and effective countermeasure and should always be considered. For other types of radiation emergency they are unlikely to be relevant. The three ways of distributing stable iodine to the public are: pre-distribution (i.e. delivering to all potentially affected households on a routine contingency basis); in-person collection by members of the public from local stores or public centres; and door-to-door distribution in the event of an emergency. There are advantages and disadvantages to all of these methods so local authorities/planners need to have the freedom to select the most effective method in their circumstances. However, it is expected that local responders will choose to use the local hub/distribution method which is most aligned to the concept of outline planning. Pre-distribution is already carried out within the detailed emergency planning zone so no regulatory changes are required to allow local responders to implement this over larger distances. The latter two options require local responders to maintain local stockpiles and to be responsible for distributing them to members of the public.

25. In Scotland, under the Public Health etc (Scotland) Act 2008, the responsibility for public health rests with the local health boards⁴⁷.

26. Stable iodine is a pharmacy medicine, meaning its sale and supply must take place from a registered pharmacy and be supervised by a pharmacist. This requirement is set out at regulation 220 of the Human Medicines Regulations 2012 (SI 2012/1916). This creates problems because sites cannot rely on pharmacist-supervised distribution during the extreme time pressures of a nuclear emergency. Consequently, the government intends to create an exception to these Regulations to allow those acting under the local authorities' emergency plans to issue stable iodine to members of the public in the event of an emergency.

27. Our intention is that local responders may:

⁴⁷ http://www.legislation.gov.uk/asp/2008/5/pdfs/asp_20080005_en.pdf

- Store stable iodine at local sites that they deem to be appropriate, for example, schools, hospitals and town halls; and
- Distribute stable iodine door-to-door to members of the public through emergency services, volunteers etc. Alternatively, they can arrange for members of the public to collect stable iodine from local sites if this does not compromise other countermeasures, such as sheltering.

28. If the organisation that procured the iodine does not have a wholesaler dealer's licence (see para 30), specific restrictions on storage/distribution apply: while local sites would not necessarily need to be owned or under the control of that organisation, the procuring entity must still maintain responsibility for the stable iodine at all times. Likewise, those distributing stable iodine would not need to be employees of the original purchaser, provided that, in their emergency role, they are acting on behalf of, and under the supervision of, that organisation. Again that organisation would need to maintain full responsibility for the stable iodine and the supply to the public.

29. The details of how responsibility for the stable iodine is maintained throughout the process should be included in emergency plans. A single organisation would need to:

- Procure the stable iodine, although:
 - Costs could be claimed back from the Site Licence Company; and,
 - The government is investigating how current stockpiles held nationally could be used to supplement local supplies.
- Ensure the stable iodine is procured in a correctly packaged manner, i.e. the iodine can be distributed to households without further need for breaking down the blister pack into smaller quantities (this would be considered medicine assembly, requiring a manufacturer's licence);
- Maintain responsibility for it while it is in storage, regardless of what site it is stored at, including such responsibilities as checks on expiration dates, recalls, ensuring it is stored securely and in suitable conditions, and is assigned to relevant responsible persons; and
- Maintain responsibility for its distribution, although they may call upon employees of other organisations such as emergency services, or volunteers, provided these persons are acting on behalf of that responder;

30. If stable iodine is supplied from one organisation to another before it is supplied to the public then this would constitute wholesale dealing. As such, the organisation making the wholesale supply would need to hold a wholesaler dealer's licence (WDA(H)). Examples of such scenarios include:

- If the Site Licence Company procures the stable iodine directly and then supplies it to local authority sites, the Site Licence Company would have to apply for a WDA(H) if it doesn't have one already;
- If a local authority or health board procures, but does not maintain responsibility for the storage and distribution of stable iodine (passing these responsibilities to another organisation), or if it wanted to share stocks with other local authorities/health boards, the local authority/health board would need to apply for a WDA(H).

31. In light of the importance of the timely administration of stable iodine to an emergency management system that is able to respond effectively to a nuclear emergency, the government recognises the need to support local responders with guidance and advice in relation to fulfilling their responsibilities in relation to the procurement, storage and distribution of stable iodine. The

government therefore intends to work with the regulators, including the Medicines and Healthcare Products Regulatory Agency (MHRA), to ensure such guidance and advice is made available.

32. The wholesaler dealer's licence is a cost to business that has not been accounted for in the Impact Assessment.

Glossary

Key acronyms, legislative frameworks and documents

Acronyms – organisations

BEIS: Department for Business, Energy and Industrial Strategy

CRCE: Public Health England's Centre for Radiation, Chemical and Environmental Hazards

DNSR: Defence Nuclear Safety Regulator

HPA: Health Protection Agency

HSE: Health and Safety Executive

IAEA: International Atomic Energy Agency

ICRP: International Commission on Radiological Protection

MOD: Ministry of Defence

MHRA: Medicines and Healthcare products Regulatory Agency

NAIR: National Arrangements for Incidents involving Radioactivity

NHS: National Health Service

ONR: Office for Nuclear Regulation

PHE: Public Health England

Acronyms – other

BSSD: Basic Safety Standards Directive

CDG: Carriage of Dangerous Goods 2009

DEPZ: Detailed emergency planning zones

(<http://www.onr.org.uk/depz.htm>)

ERL: Emergency Reference Level (<https://www.gov.uk/government/publications/radiation-emergency-reference-levels>)

EP&R: Emergency Preparedness and Response

EPRIMS: Emergency Preparedness and Response Information Management System

HIRE: Hazard Identification and Risk Evaluation

IRRs: Ionising Radiations Regulations 1999

LRF: Local Resilience Forums – in Scotland, the equivalent is Resilience Partnerships

mSv: Millisievert (measure of radiation dose)

NEPRG: Nuclear Emergency Planning and Response Guidance

RPP: Radiation Protection Programme

REPPIR: Radiation (Emergency Preparedness and Public Information) Regulations 2001

RMUs: Radiation Monitoring Units

RTA: Regulatory Triage Assessment

Legislative framework

Europe

ADN: European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

Basic Safety Standards Directive (1996)

Basic Safety Standards Directive (2013)

Euratom Treaty

IAEA Regulations for the Safe Transport of Radioactive Material

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

UK

Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (2009)

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (Northern Ireland) 2010

Civil Contingencies Act (2004)

Energy Act (2013)

The Fire and Rescue Services (Emergencies) (England) Order 2007

Fire and Rescue Services (Emergencies) Order 2007[1] (The Fire (Additional Function) (Scotland) Order 2005

Health and Safety at Work Act (1974)

Ionising Radiations Regulations (1999)

Management of Health and Safety at Work Regulations

Nuclear Installations Act 1965

Public Health etc (Scotland) Act 2008

Radiation (Emergency Preparedness and Public Information) Regulations (2001)

RCL: Radioactive Contaminated Land

Documents

A guide to the Radiation (Emergency Preparedness and Public Information) Regulations 2001

Nuclear Emergency Planning and Response Guidance – Concept of Operations (Ref: 15D/466)

Nuclear Emergency Planning and Response Guidance – Preparedness (Ref: 15D/465)

Nuclear Emergency Planning and Response Guidance – Response (Ref: 15D/464)

Nuclear Emergency Planning and Response Guidance – Recovery (Ref: 15D/463)

Nuclear Emergency Planning and Response Guidance – Annexes (Ref: 15D/462)

Preparedness and Response for a Nuclear or Radiological Emergency / General Safety Requirements / IAEA Safety Standards Series

Regulations for the Safe Transport of Radioactive Material / Specific Safety Requirements / IAEA Safety Standards Series

Public Exposures Consultation Document

Radiation Monitoring Units: Planning and Operational Guidance

Transporting radioactive material – Guidance on emergency arrangements