

Title: Revised requirements for radiological protection: emergency preparedness and response	Impact Assessment (IA)
IA No: BEIS018(C)-17-CNRD	Date: 26/05/2017
RPC Reference No: RPC-4100(1)-BEIS	Stage: Consultation
Lead department or agency: Business Energy and Industrial Strategy Business Energy and Industrial Strategy (BEIS)	Source of intervention: EU (Euratom)
Other departments or agencies: Health and Safety Executive (HSE), Office of Nuclear regulation (ONR), Ministry of Defence (MOD)	Type of measure: Secondary legislation Contact for enquiries: Hetti Isaac henrietta.isaac@beis.gov.uk

Summary: Intervention and Options

RPC Opinion: GREEN

Cost of Preferred (or more likely) Option

Total Net Present Value	Business Net Present Value	Net cost to business per year (EANDCB in 2014 prices)	One-In, Three-Out	Business Impact Target Status
-£17m	-£1m	£0.1m	Not in scope	Non qualifying provision

What is the problem under consideration? Why is government intervention necessary?

The Basic Safety Standards Directive (2013/59/Euratom), referred to hereafter as the BSSD 2013, consolidates and updates existing Euratom provisions for protection against the harmful effects of ionising radiation. It establishes minimum standards for radiological protection of workers, medical patients and the public in existing, planned and emergency situations. The BSSD 2013 replaces the Basic Standards Directive 1996. BSSD 1996 was transposed into the Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPIR).

This impact assessment focuses on the transposition of the Emergency Planning and Response (EP&R) elements of the BSSD 2013 and examines how REPIR and the arrangements to plan and respond to radiological emergencies in the UK will be updated to implement the Directive and how these legislative changes will impact on industry and local government. There are separate impact assessments for the exposure of members of the public and occupational exposures elements of the BSSD 2013. The deadline for transposition of the BSSD 2013 is 6 February 2018.

The BSSD 2013 (like the Euratom Treaty under which the Directive has been made) does not apply to defence activities. Generally, the Ministry Of Defence is bound by health and safety requirements. In certain circumstances exemptions may however apply. At this stage, the costs and benefits throughout this impact assessment do not include the impact on defence facilities.

What are the policy objectives and the intended effects?

The policy objectives are to fully transpose the Directive as the UK is still a member of Euratom. Implementing the BSSD 2013 will bring significant improvements to the UK's legislative framework for nuclear emergency management and ensure the UK stays in step with international best practice. The costs of planning are borne by site operators.

The specific policy objectives are to:

- maintain a proportionate approach to radiological emergency planning;
- maintain or increase public confidence in the radiological sectors;
- move towards an outcome-focused regulatory system that brings EP&R regulation in line with wider regulatory regimes; and
- minimise the burdens on business and Local Authorities where complying with regulations can be made simpler.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

BEIS undertook a thorough gap analysis to identify the legislative changes required to transpose the Directive. The BSSD 2013 requires Member States to enforce the provisions of the Directive so this requires a basis in legislation. However, wherever changes can be made to administrative arrangements without the need to update legislation, BEIS has taken this approach.

There are two broad ways in which the UK's emergency management framework for radiological emergencies can be brought into line with the directive.

The first is to adopt a deterministic approach to emergency preparedness, to accept that emergencies at sites can happen rather than explore likelihood and base the need for planning on historic data of the impact of these emergencies. This would mean that planning distances and capabilities are determined at a national level depending on the type of site. This approach is explored in Option 1.

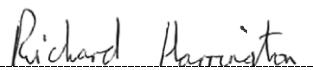
The second approach is to assess the likelihood and impact of an accident at a site and base planning on the result of this assessment. This is the approach the UK currently takes. Option 2 builds on this approach, maintaining a risk-based approach to emergency planning in the UK and is our preferred approach.

Will the policy be reviewed? It will be reviewed. If applicable, set review date: May/2023

Does implementation go beyond minimum EU requirements?		No		
Are any of these organisations in scope?	Micro No	Small No	Medium Yes	Large Yes
What is the CO ₂ equivalent change in greenhouse gas emissions? (Million tonnes CO ₂ equivalent)		Traded: n/a	Non-traded: n/a	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible Minister:

 Date : 05 October 2017

Summary: Analysis & Evidence

Policy Option 1

A deterministic approach to planning for more severe radiological emergencies

FULL ECONOMIC ASSESSMENT

Price Base Year: 2017	PV Base Year: 2017	Time Period Years: 10	Net Benefit (Present Value (PV)) (£m)			
			Low: -£31m	High: -£5m	Best Estimate: -£18m	
COSTS (£m)		Total Transition (Constant Price) Years		Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)	
Low		nil		£0.5m	£3m	
High		nil		£4m	£34m	
Best Estimate		n/a		£2m	£19m	

Description and scale of key monetised costs by 'main affected groups'

Sites will face an increase in costs to plan per year for less likely but more severe emergencies:

Maintaining and updating plans: £1,000-£3,000. This reflects the added complexity of planning for a less likely, but more severe, event.

Provision of Stable Iodine pills: £0-£247,500. The expenditure on Stable Iodine pills is driven by the expanded population of an increased planning zone as more pills will be needed.

Public information: £700-£3,500. Population increases and range of coverage will increase the cost of disseminating information to the public. An aspect of this is the cost of tailoring messages and communicating to hard-to-reach populations.

Testing of plans: £300- £1,100. This is based on the assumption that while planning would increase in complexity and extent, testing would not increase in parallel.

Individual Local Authorities responsible for creating plans can pass these costs on to site operators. A proportion of these site operators are not publicly funded, there are currently 7 sites operated by EDF which will not be able to pass on these costs to the taxpayer.

Other key non-monetised costs by 'main affected groups'

This policy option is highly prescriptive and leads to some sites being compelled to implement blanket detailed planning or specific protective actions. Sites with lower risk may be required to do planning that is disproportionate

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)	
			Low	High
Low	nil	nil	nil	nil
High	nil	nil	nil	nil
Best Estimate	n/a	n/a	n/a	n/a

Description and scale of key monetised benefits by 'main affected groups'

Benefits associated with planning for more severe emergencies are not necessarily possible to monetise. However in the event of a nuclear emergency, there would be significant costs to the UK which planning in place before the event would mitigate. At this stage, we have not identified specific monetised benefits for either of the options but we will consider this further during consultation. Stakeholders may be able to provide examples.

Other key non-monetised benefits by 'main affected groups'

The main non-monetised benefit of this approach is the capability to plan for the full range of emergencies (up to and including unforeseen, more severe emergencies) that could occur in the UK.

This approach is in line with the IAEA guidance on radiological EP&R. Maintaining a strong EP&R regulatory framework will ensure continuity and contribute to public confidence in nuclear energy and radiological businesses. This is particularly important when the UK leaves Euratom.

Key assumptions/sensitivities/risks	Discount rate (%)	3.5%
Maintaining and updating plans: considers the amount of time required to amend current outline planning. Provision of Stable Iodine pills: the range for the costs of the Stable Iodine tablets is because of the uncertainty		

around how dutyholders may choose to distribute the pills

Public information: how dutyholders plan on accessing difficult-to-reach and vulnerable populations

Testing of plans: dependent on the additional extent and complexity of new plans.

These assumptions are uncertain and we are seeking feedback on them through consultation.

BUSINESS ASSESSMENT (Option 1)

Direct impact on business (Equivalent Annual) £m:

Costs: £0.1

Benefits: nil-

Net: -£0.1m

Score for Business Impact Target (qualifying provisions only) £m: 0.5

Summary: Analysis & Evidence

Policy Option 2

A risk-based approach to planning for more severe radiological emergencies

FULL ECONOMIC ASSESSMENT

Price Base Year: 2017	PV Base Year: 2017	Time Period Years: 10	Net Benefit (Present Value (PV)) (£m)		
			Low: -£30m	High: -£5m	Best Estimate: -£17

COSTS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	nil	Insert	£0.5m
High	nil		£3m
Best Estimate	n/a		£2m

Description and scale of key monetised costs by 'main affected groups'

Sites will face an increase in costs to plan per year for less likely but more severe emergencies.

Cost of planning for more severe emergencies in existing detailed emergency planning zones: £1,800-£7,000

For the new sites that fall into the category for outline planning the cost to maintain plans and protective actions: £20,000

There would also be a cost to consulting a Local Authority on whether a plan is necessary and/ or its extent associated with this risk-based approach: £18,500-£73,800. This would not be an annual cost.

Individual Local Authorities responsible for creating plans can pass these costs on to site operators. A proportion of these site operators are not publically funded, there are currently 7 sites operated by EDF which will not be able to pass on these costs to the taxpayer.

Other key non-monetised costs by 'main affected groups'

We have not identified non-monetised costs associated with this option that is additional to the status quo.

BENEFITS (£m)	Total Transition (Constant Price) Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	nil	Insert	nil
High	nil		nil
Best Estimate	n/a		n/a

Description and scale of key monetised benefits by 'main affected groups'

Benefits associated with planning for more severe emergencies are not necessarily possible to monetise. However in the event of a nuclear emergency, there would be significant costs to the UK which planning in place before the event would mitigate. At this stage, we have not identified specific monetised benefits for either of the options but we will consider this further during consultation. Stakeholders may be able to provide examples.

Other key non-monetised benefits by 'main affected groups'

This approach allows local planners to take decisions, based on the relative benefit (or harm) of planning to implement countermeasures. Linked to this, local planners can also take advantage of synergies with generic arrangements which can put downward pressure on costs.

In addition, as with Option 1, maintaining a strong EP&R regulatory framework will contribute to public confidence in nuclear energy and radiological businesses. The UK wants to maintain its position as an international leader in nuclear safety and security because this will support the delivery of the next generation of nuclear energy in the UK.

Key assumptions/sensitivities/risks	Discount rate (%)	3.5%
Costs for planning for more severe emergencies: this includes planning for larger areas and populations.		
Costs from establishing plan/ consulting the local authority: dependent on the amount of time it will take to consult Local Authorities on the extent of planning necessary for each site; this in turn is driven by the complexity and size of each site.		
Cost of offsite planning for new sites: this would include the cost of less detailed planning around sites and potentially some capabilities.		

BUSINESS ASSESSMENT (Option 2)

Direct impact on business (Equivalent Annual) £m:	Score for Business Impact Target (qualifying provisions only) £m:
Costs: £0.1m Benefits: nil Net: -£0.1m	0.5

Problem under consideration and rationale for intervention

1. The BSSD 2013 reflects current international consensus on the need, post-Fukushima, to consider and prepare for very low probability emergencies. Although the risk profile of UK nuclear and radiological sites has not changed, the UK is committed to the highest standards of EP&R and will therefore adopt the changes as part of our aim for continuous improvement and to stay in step with international standards. The UK is also using the opportunity to clarify the regulatory framework for nuclear and radiological EP&R. This will be done in a way that is outcome-focussed and uncertainty about the level of planning that industry will be required to support will be reduced. This Impact Assessment presents an appraisal of the two lead options for the transposition of the Emergency Preparedness and Response (EP&R) elements of the Basic Safety Standards Directive (BSSD) 2013. We intend to use the consultation process to gather further information that will be incorporated into the final IA.

1.1 To transpose the BSSD 2013 we plan to repeal and replace REPPIR 2001. We plan to use powers in both the Energy Act 2013 and the Health and Safety at Work etc. Act 1974 to make the required changes that will result in a consistent framework across all sectors.

1.2 On March 29th 2017 the Government formally notified the European Commission of the UK's intention to withdraw from Euratom. Until exit negotiations are concluded, the UK remains a full member of the Euratom and all the rights and obligations of Euratom membership remain in force. During this period, the government will continue to negotiate, implement and apply Euratom legislation. The assumptions used in this IA have been chosen accordingly.

1.3 Although the UK will be leaving the EU and Euratom, implementing the EP&R standards in the BSSD 2013 is in any event important to stay in step with other international standards (including the International Atomic Energy Agency).

1.5 Furthermore regulations may need to be adjusted over time to reflect any changes in the sector.

Policy Objectives

2. The BSSD 2013, was drafted after the Fukushima Daiichi nuclear accident in 2011, and reflects lessons learned from the emergency preparedness and response for that incident. In particular, the Directive requires planning to be sufficiently comprehensive and flexible to be able to respond effectively to more and less likely emergencies that we might expect to occur in the normal course of operations, for both nuclear and non-nuclear sites, and to emergencies that are unexpected/unusual, whether in their size, severity, location or for any other reason. It introduces an uplift in the required standards for EP&R and new regulations will therefore reflect this more comprehensive emergency management system.

2.1 The UK's current nuclear emergency management system is built upon a framework of various national and international laws and treaties. These include the UN Convention on Nuclear Safety, legislation made under the Euratom Treaty and domestic legislation.

2.2 In terms of real-world capabilities, the UK has a system, based on detailed planning around sites, which enables key responses to a nuclear emergency through:

- situational awareness and radiation monitoring;
- protective actions;
 - specific medical countermeasures (stable iodine pills)
 - sheltering and,
 - for severe cases, evacuation; and
- generic emergencies capabilities (e.g. traffic management, care of vulnerable populations, public communications).

2.3 Specifically, Article 97.2 of the BSSD 2013 requires the emergency management system to 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 emergencies.”

Gap analysis

2.4 BEIS has undertaken a gap analysis of the BSSD 2013 requirements against the UK’s current arrangements. This has been a complex and technical exercise requiring specialist input from the Office for Nuclear Regulation (ONR), the Health and Safety Executive (HSE) and Public Health England (PHE); it has identified the following gaps:

- a. How the UK defines radiological emergencies and how the UK assesses the risk of an emergency. The UK currently uses the possibility of a particular radiological health impact occurring (a person receiving an effective dose of 5mSv of radiation in the year following the emergency) to define a nuclear emergency. Neither a radiation release which would not give rise to that particular health impact, nor the broader environmental, economic, social and psychological impacts of a radiation release, are part of the UK’s current definition of a nuclear or radiological emergency. At present, the UK legislative framework requires operators and Local Authorities to plan for “reasonably foreseeable” radiation emergencies. Custom and practice deems this threshold to be approximately a one in 100,000 year event, so preparation for emergencies that are considered to be less likely than that are not currently planned for (regardless of their severity). The BSSD 2013 defines an emergency as much wider, with impacts beyond the radiological health impacts of a release. The Directive requires Member States to identify potential emergencies and proportionately plan for them, but also be capable of effectively responding to unforeseen emergencies i.e. an emergency that is more severe, or behaves differently, than anticipated.
- b. How the UK plans for various emergencies (including severe) and build real-world capabilities. As part of the Nuclear Emergency Planning and Response Programme, we have been working with Local Authorities and site operators to roll out voluntary outline planning for larger scale emergencies. This voluntary approach has made some progress and is a good starting point, but there are some inconsistencies in how it has been adopted and there remains a gap for BSSD requirements in relation to putting planning for ‘unforeseen’ emergencies on a statutory footing.

2.5 In sum, our current system caters for emergencies of a certain probability and consequence but not for emergencies of the same probability but different (probably smaller) consequences, or for emergencies of a lower probability and difference (potentially larger) consequences.

Equalities impact

4. We consider there is no disproportionate impact on groups with protected characteristics as defined in the Equalities Act 2010. This because the regulations will only place duties or costs on LAs and operators of nuclear sites.

Stakeholder engagement – sources of evidence

5. All assumptions in this IA have been informed with input from stakeholder engagement. Stakeholders’ contributions have helped government refine and improve all policy proposals. In particular, we have tested the options with stakeholders to ensure the UK has a robust and effective emergency management system and that burdens on business are understood.

5.1 Engagement with stakeholders began in September 2015, and there has been on-going discussion with them as policy has developed. Stakeholders most impacted by changes have been the focus of this engagement. In particular, Local Authorities (LAs), who create and maintain and update off-site plans, and

civil nuclear operators, who bear the cost of planning, have been closely involved in identifying the impacts of policy changes.

5.2 Evidence on the costs faced by LAs when fulfilling their off-site planning obligations under REPPIR has been acquired from the Local Authority Working Group.

5.4 A source for the impact of planning for more severe emergencies is the extendibility assessments carried out during 2016. The need for these workshops emerged from the HM Chief Inspector's Post-Fukushima report on the implications of the event for the UK nuclear industry. The report concluded that existing emergency arrangements were fit for purpose but that in the spirit of continuous improvement, "Government should examine the need to enhance the UK's extendibility arrangements for extending countermeasures beyond the detailed emergency planning zone in the event of more serious accidents." The government reviewed and reissued their advice on extendibility planning (Nuclear Emergency Planning and Response Guidance) after conducting a number of pilot studies at sites with different characteristics.

5.5 Following on from this, HM Government and the Scottish Government wrote to LAs asking them to undertake an assessment of their capabilities to extend their current arrangements for nuclear emergencies. The workshops involved participants from LAs, emergency response organisations, e.g. the police, the nuclear site operators and national regulatory bodies.

5.6 Close engagement with stakeholders will continue throughout the public consultation and parliamentary process stages of these changes to REPPIR. Stakeholders will also be closely consulted on the formulation of new supporting guidance.

Further changes to REPPIR

6. The most significant change introduced by the BSSD 2013 is the requirement to plan for various emergency scenarios up to and including unforeseen emergencies, and that planning is commensurate with risk. The costs and benefits of options for implementing these changes have been the focus of the analysis for options 1 and 2. However, there are additional, smaller changes that will also be introduced when REPPIR 2001 is updated. These are set out in Annex A because we consider there are no costs associated with them as they will not need to be implemented ahead of the required three yearly update of plans, but these changes will be made under either Option 1 or 2.

Descriptions of Options Considered, Costs and Benefits

7. The status quo for emergency planning and response is that the regulations that determine whether a site must have an off-site plan are REPPIR 2001. A site is subject to REPPIR 2001 if it holds radiological material in excess of the quantities specified in Schedule 2 in the regulations. At present there are around 100 sites in the UK which must all undertake a Hazard Identification and Risk Evaluations (HIRE) process to identify all possible emergencies and their consequences. In the UK, 14 civil sites and nine defence sites have off-site emergency plans. The plan is created and maintained by the LA.

7.1 The outcome of the HIRE process is then reported to the regulator (ONR or HSE) in the form of a Report of Assessment (RoA). The RoA identifies a Reference Accident, which gives an idea of the potential impact of emergencies at the site as modelled by the operator. If the reference accident has a probabilistic assessment showing that it is 'reasonably foreseeable' (not defined in law, but in practice around 1 in 100,000 year probability) and that it could result in a member of the public receiving a dose of 5mSv or more (radiation emergency), an off-site plan must be prepared. The Regulator then reviews the RoA, and identification of the Reference Accident, and determines the area over which off-site plans are required.

7.2 If there was no change to the current regulations, the UK would be unable to demonstrate full compliance with the requirements of the BSSD 2013.

7.3 Although ‘Do nothing’ was not considered viable, it has been included in this IA, however, to provide a counterfactual against which to appraise the other options in accordance with Better Regulation Guidance.

7.4 In transposing the BSSD 2013, and its requirement for an emergency management system sufficiently comprehensive and flexible to deal with more severe emergencies and unforeseen events, there are two high-level approaches.

7.5 Option 1 examines the impact of adopting a deterministic approach to emergency preparedness. This approach is built on an acceptance that emergencies at sites can happen and proportional planning is based on historic data of their impact. Likelihood is not calculated on a site-by-site basis and planning distances and capabilities are determined at a national level depending on the type of site.

7.6 Option 2 assesses the likelihood and impact of an accident at a particular site and bases planning on the result of this assessment. This is the approach the UK currently takes. This second option builds on this, maintaining a risk-based approach to emergency planning. Our preferred approach is Option 2, allowing the UK to implement the BSSD 2013 in a way that builds on the UK’s risk-based processes for emergency planning and response. It would allow for the adoption of an outcome-focused (rather than process-focused) regulatory framework. It also has slightly lower costs and there are, in addition, strong qualitative benefits (para 9.17) that further strengthen the case for transposing the new Directive in a way that maintains at least a partially risk-based approach in the UK.

7.7 Costs and burdens on business are a consideration for both options. We have therefore calculated at least indicative costs, with the assumptions underlying them for each option but recognise that these will benefit from refinement during the consultation phase.

7.8 Although the duty to prepare for the emergencies rests with Local Authorities, they can re-charge these costs to operators (this is the case whether the operator is a private company or the responsibility of the Nuclear Decommissioning Authority which is a non-governmental public body). We intend to maintain this approach. This means that the cost of planning and preparing for a radiological emergency are borne by the operators of nuclear or radiological sites.

7.9 Where these sites are civil sites involved in the production of electricity, the cost is borne by the company which owns the site. They may pass this cost on to their customers (in the cost of energy) but competition in the energy market between electricity generators should limit the impact on bill payers. This is the case for 7 sites. The Nuclear Decommissioning Authority is the strategic authority that owns the other civil nuclear licensed sites which have off-site plans. The cost of plans for those sites is therefore indirectly borne by tax payers who fund the NDA’s decommissioning activities. Should non-nuclear sites be required to pay for off-site plans in the future, the companies operating the sites would bear the cost. This is because, as with electricity producing sites, the potential social cost of a radiological accident arises from the economic activity of operators.

7.10 The benefits of the BSSD 2013 are that it defines an emergency as much wider, with impacts beyond the radiological health impacts of a release. The Directive requires Member States to identify potential emergencies and proportionately plan for them, but also be capable of effectively responding to unforeseen emergencies i.e. an emergency that is more severe, or behaves differently, than anticipated.

8. Option One: nationally determined planning zones

8.1 The EP&R elements of the BSSD 2013 requires proportionate planning for the full range of emergencies, not just those which are reasonably foreseeable or those which would give a person a radiation dose of 5mSv or more in the year following the emergency. One way of managing this new requirement, as proposed by the International Atomic Energy Association (IAEA) standards, is that the UK could move away from a probabilistic approach to emergency planning. This would mean that hazard assessments (such as the HIRE) are no longer used to drive emergency planning and response. This

option explores the costs and benefits of this approach (including monetised costs and benefits where possible).

8.2 The alternative approach to determining a commensurate emergency management system is to have generic planning requirements based on the type of facility rather than requirements determined on a site by site basis. An example of this deterministic approach to planning, drawn from IAEA's analysis of global data on risk and consequences, is the planning zones that IAEA has determined. These are as follows:

Table 1 Representing IAEA's approach to planning distances for nuclear power plants¹

	Power MW(th) of the nuclear power plant (civil nuclear only)	
	$\geq 1,000$ MW(th)	100 to 1,000 MW(th)
Precautionary Actions Zone emergency arrangements to avoid or to minimise severe deterministic effects	3 to 5 km	-
Urgent protective action planning zone emergency arrangements to reduce the risk of stochastic effects	15 to 30 km	-
Extended planning distance actions to prevent inadvertent ingestion and actions to protect food chain and water supply systems)	100 km	50 km
ICPD: Ingestion and commodities planning distance	300 km	100

8.3 How the need for off-site emergency planning is determined: Rather than modelling possible emergencies and their impact on a site-by-site basis, off-site plans would be created on the basis of the category of site. IAEA suggests categories. The planning distances / zones outlined above then combine with these categories to determine what level of planning and to what distance is required. For example:

Table 2 Representing the IAEA approach to planning distances based on the type of facility

Category 1 facility: e.g. nuclear power plant	Category 2 facility: e.g. research reactor	Category 3: e.g. non-nuclear sector
Precautionary Actions Zone (PAZ) :3-5km: and Urgent protective action planning zone (UPZ): (similar to UK detailed emergency planning zone) 15-30km and Extended planning distance (EPD): 100km	Urgent protective action planning zone: 5-30km and Extended planning distance: 100 km	Extended planning distance: 50km <u>only</u>

8.4 How it is carried out: If adopted in the UK, it might still be appropriate for the LA to lead on the creation of the off-site plan, and it would still require expert input from PHE on countermeasure planning. The regulators would still have a role in regulating the planning process ensuring that it is adequate, though not in determining the planning needed for a site.

Monetised costs

Table 3 Annual monetised costs of Option 1 for sites with existing off-site planning, 10-year appraisal period

¹ GSG 2.1 <http://www-pub.iaea.org/MTCD/publications/PDF/Pub1265web.pdf>

£ ²⁰¹⁶	Average annual cost per site with DEPZ (£)	Additional costs incurred due to Policy 1		Discussion
		Low Scenario (£)	High Scenario (£)	
Maintaining / updating plans	10,000	1,000	3,000	<ul style="list-style-type: none"> It was challenging for Local Authorities to separate this expenditure in reporting their costs from current expenditure on maintaining / updating plans because planning for more severe emergencies would not be carried out in isolation but would build on existing planning for generic emergencies and less severe radiation emergencies In the absence of evidence from stakeholders, we have drawn on evidence from the cost of completing extendibility assessments (between £5,000 and £15,000) by Local Authorities as well as current costs of maintaining and updating plans (an average of £10,000 a year) for less severe emergencies. The low range represents sites which do not, in planning for more severe emergencies, take in densely populated areas or which have other relevant planning in place already. The upper range represents sites which either need to plan for new capabilities or which encounter areas of dense population in planning for more severe emergencies.
Stable Iodine Pills (and their distribution) purchased by the operator	2,500	0	247,500	<ul style="list-style-type: none"> These costs (of purchasing, storing and planning for the distribution of stable iodine pills) are driven by the size and multiplicity population included in planning zones. The low scenario represents sites where a standardised 3-5km zone represented no change in population (e.g. sparsely populated areas) The high scenario represented sites, located near conurbations, where a wider detailed planning zone could potentially bring in much larger populations. The range in population density around sites that we have observed based on Radioactive Incident Monitoring Network data suggests scale factors of 0-100.

Public information (e.g. phone system and leaflet)	7,000	700	3,500	<ul style="list-style-type: none"> Population increases are a key driver of costs. Costs will not be linear here, and Local Authorities will already have capabilities in this space related to non-radiological emergencies. This is because there are economies in scale inherent to communicating with wider audiences. The range of 10%-50% has been applied based on internal guidance, and represents the range in population density around sites as this would increase costs associated with the need to tailor messages and target hard-to-reach populations. We anticipate that this would be a smaller additional cost than stable iodine tablets because distribution costs will be minimal in comparison. Further evidence around this cost will be sought during consultation.
Testing plans	5,700	300	1,100	<ul style="list-style-type: none"> We have assumed that between a 5%-20% increase in the cost of planning and testing would be incurred for the sites that already have an off-site detailed emergency planning zone, based on feedback from the extendibility workshops. This is based on the assumption that planning and testing would increase in complexity and extent, but not by a significant amount. This assumption is informed by discussions with representatives from LA's and operators. We expect to gain supporting evidence of this during further consultation.
Total (£)	25,200	2,000	255,100	

8.5 Evacuation This is not included as a cost in this option because this countermeasure has historically been thought to be harmful for larger populations in a larger emergency planning zone. Most extendibility workshop participants considered evacuation beyond 5km as impractical, or requiring significant external support. Furthermore LAs already have this capability for other, non-radiological emergencies such as flooding – we have assumed that it would remain a generic rather than a nuclear-specific capability for the vast majority of sites. Where evacuation under a plume is justified, this would be in a severe emergency and there would be a national response and commensurate support.

Table 4 Monetised costs of undertaking Option 1 style planning for sites without off-site planning currently

£ ²⁰¹⁶	Low Scenario (£)	High Scenario (£)
Total Costs for 14 UK sites with DEPZs	28,000	3,571,000
Illustrative only — 16 UK sites with outline only planning	240,000	320,000
Total (for all sites)	268,000	3,891,000

Discussion of assumptions in the table:

8.6 Numbers of sites: We have assumed that 30 sites across the UK would have UPZ and/ or PAZ style planning around their sites. This represents around one third of all nuclear sites. We have separated in the table the 14 sites in the UK that already have off-site planning – we have assumed that these sites would undertake UPZ and PAZ style planning. We have assumed that 16 additional sites would be required to undertake UPZ style planning. As the exact categorisation for the UK is not determined and we have not examined exactly which sites would fall into which IAEA category, this is an illustrative number based on

30% proportion of the sum of all sites regulated by ONR plus those non-nuclear sites returning HIREs to HSE, which is 100 sites in total. This is the low range of sites in the Option 2 ‘outline only planning’.

8.7 Costs for sites with no off-site planning currently: We have assumed that some sites that currently have no off-site planning would, under this categorisation, undertake some UPZ style planning. We have used an assumption cost for this planning of £20,000, which is the status quo average cost of maintaining off-site plans. We will gather more information on this at consultation but the cost reflects a standardised process both in extent and what is required. It also reflects that no planning is currently done and that there will need to be some familiarisation and building of capability. Moving from no off-site planning to some may lead to local challenges and these will have a cost, which is difficult to predict.

8.8 Familiarisation Costs: All dutyholders will face some degree of familiarisation costs as a result of changes to REPPIR and associated guidance. We assume these will be one-off costs. The extent of these costs will depend on the nature of the dutyholder; whether they are an LA, or a non-nuclear site, or whether the site currently performs any off-site planning. The below assumptions on familiarisation costs have been gathered from initial contact from stakeholders, but will be explored further during consultation.

£ ²⁰¹⁶	Low (£)	Central (£)	High (£)
Local Authorities	4,500	5,600	6,600
No Off-site Plan	552,000	690,000	828,000
Total	562,900	705,200	847,400

These costs are based on:

8.9 Local Authorities: there are seven with a total of 14 emergency off-site plans. We do not have complete data from stakeholders but if we assume similar technical complexity, staff involvement and bureaucracy familiarisation time is two days. Based on stakeholder responses from the Local Authority Working Group, their average full cost of time per hour is around £53. One-off costs of familiarisation are therefore estimated to be around £5,500 for the central scenario.

8.10 Currently no off-site planning: around 30,000 hospitals, universities and other organisations currently have no off-site plan. For those sites that do not need to make any changes to their off-site planning, the familiarisation time will be minimal. For those on the border of current thresholds, it could be considerably more burdensome. We have assumed an average of an hour per organisation. Using an estimated cost of £23 per hour (taken from the Annual Survey of Hours and Earnings 2015 for a health and safety officer adjusted to 2016 prices) the total cost is estimated to be around £660K central scenario. However, this will be tested during the consultation.

8.11 Non-monetised costs: this approach would represent a significant change in the approach to planning for radiological emergencies for the UK. Deterministic approaches are arguably better suited to less densely populated countries and most appropriate where zones cross national borders, so that a uniformity of approach adds value. For the UK, the size of the populations included in pre-determined areas makes most countermeasures (nuclear-specific or otherwise) unrealistic and potentially harmful. Evacuation in particular of very large populations would be highly unlikely to deliver more benefit in any emergency situation, and could cause more fatalities than the emergency itself, unless it is planned. The relative density (compared to European countries) of populations around some sites drives up planning and capabilities costs. At the societal level, LAs and local emergency planning services are more likely to be in possession of knowledge needed to produce a proportionate, targeted and cost-effective response which provides the maximum effective protection for the most reasonable cost. They can take into account existing planning arrangements that could be adapted for nuclear/ radioactive emergencies. For non-nuclear sites, a deterministic approach may be too prescriptive for a wide-ranging category of site (the more hazardous sites might need a commensurate level of planning).

8.12 Non-monetised benefits: the main non-monetised benefit of this approach compared to the status quo is the commensurate planning for the full range of emergencies (up to and including unforeseen, more severe emergencies). This approach is also in line with the IAEA guidance on radiological EP&R.

8.13 A benefit specific to this approach would be the significantly reduced HIRE costs. A deterministic approach means that the role of the HIRE process for off-site planning would be reduced. Sites would plan based on the category of the facility rather than specific hazard assessment. This is a much less complex process for determining what planning should be undertaken and could save money for operators. We will ask for information on current HIRE costs during the consultation as this could be a monetised benefit.

9. Option Two: a combined approach

9.1 This option combines the deterministic approach of Option 1 and the risk-driven status quo based on probabilistic analysis. This explores how the benefits of a more deterministic approach to planning can be combined with the risk-based approach used to date in the UK.

9.2 Qualitative comparison with the other options: the application of REPPIR would change. The intention is still that the majority of sites that work with radiation would not be subject to its requirements. But for those sites currently subject to REPPIR the requirements would be expanded to include those sites which are currently near the cut-off of the 5mSv threshold.

9.3 Sites that could not – according to very conservative assumptions – give an off-site dose above the public dose limit (1mSv) would (as now) not be required to perform a HIRE and REPPIR would not (as now) apply. Those sites which could give rise to a dose between 1mSv and 5mSv would be required to perform a HIRE, the results of which would be discussed with the LA to determine what, if any, off-site planning is needed. The intention is to fill a current gap for those sites where their HIREs demonstrate releases close to the current threshold trigger dose of 5mSv and where some degree of off-site planning would be proportionate.

9.4 In addition, the ‘likelihood’ threshold will no longer be used to limit the extent of planning. Instead, the extent of planning required would be determined according to a combination of the HIRE and the category of the site. Sites of a particular category could have standard or default planning distances (as with Option 2), but deviation from these distances would be possible with operators able to suggest a more commensurate planning distance to a LA if they feel the standard or default distances are not appropriate (subject to the Regulator’s approval). This combines the more deterministic elements of Option 2 with the flexibility of using probabilistic analysis to inform where standards distances may, in fact, not be commensurate for a particular site.

9.5 Where an LA is content that a site presents a very low risk and/or hazard, they are able to refer to their existing generic planning arrangements and may choose to do very light-touch or no additional planning.

9.6 The regulator would verify that:

- a) the operator and LA have followed due process where different distances had been agreed;
- b) planning was suitable and sufficient.

9.7 Summarising, Option 2 will impact on dutyholders in three ways:

- For a public dose <1mSv there will, as now, be no need for dutyholders to carry out a HIRE and as now, REPPIR will not apply.
- For a public dose in the range 1mSv to 5mSv, a HIRE will be required and a discussion on the degree of planning will be needed with the LA.
- For a public dose >5mSv, a HIRE will be required and an off-site plan prepared. The requirement to plan for a range of emergencies and flexibility on standard planning distances may have additional cost.

Table 5 Monetised costs of Option 2 for sites which already have off-site planning

	Baseline average annual cost per site* (£)	Additional costs incurred due to Policy 2	
		Low Scenario	High Scenario
Maintaining / updating plans	10,000	1,000	4,000
Stable Iodine Pills (and their distribution)	2,500	100	500
Public information (e.g. phone system and leaflet)	7,000	400	1,400
Testing plans (once every three years)	5,700	300	1,100
Total	25,200	1,800	7,000

9.8 We have assumed a range of increases in costs for planning countermeasures and testing of plans. In most cases, there will be some increase in costs driven by the requirement to plan for the full range of emergencies (those that are less likely and those which previously did not meet the current REPPIR threshold). As this option builds on the current approach to planning for some sites, there may be little or no change to their approach because they can retain existing detailed emergency planning zones and combine these with generic planning arrangements for non-nuclear emergencies. For other sites, where larger detailed and larger outline planning zones are justified, costs may increase.

9.9 Factors that could increase costs include:

- existing off-site planning taking into account less likely emergencies and planning out to greater distances (e.g. 30km or further);
- planning for the consequences of various and less likely emergencies' within current detailed emergency planning zones where these have previously not been considered; and
- sites, currently with no planning, which need to complete outline and/or detailed planning due to the removal of the reasonably foreseeable threshold. How sites may fall into this category is difficult to predict and this information is something that we specifically need to gather during consultation to inform additional costs.

9.10 Factors that could put downward pressure on these costs:

- simplified HIRE processes;
- making proportionate decisions about extending plans into densely populated areas;
- using existing generic emergency planning and response capabilities wherever possible;
- moving to this approach as and when plans come up for renewal and maintaining the current cycle of testing; and
- planning and testing processes for detailed and outline planning could be combined to realise efficiencies between current extendibility and DEPZ processes.

9.11 For the low scenario we have assumed that the downward pressures in cost limit increases to 5%. The high scenario we have assumed that costs could increase by 20%. These increases are informed by the range of difficulty reported by Local Authorities as part of their extendibility assessments

9.12 As this is a proportionate approach to planning, we would not anticipate that LAs would invest disproportionately to action those countermeasures that were considered to be red. For that reason also we anticipate that the biggest increase will be in the maintaining and testing of plans rather than investing in countermeasures (stable iodine and public information) where these are particularly expensive to deliver.

Table 6 Number of sites doing different kinds of planning

Total number of sites in the scope of policy Option 2	c. 85 c. 60 Non-nuclear sites 25 civil sites
Sites which currently have detailed off-site planning and will also undertake outline planning	14 civil sites
Sites that will undertake outline only planning	c.30-80 sites (civil only)

9.13 Explaining the assumptions in this table

9.13.1 Total number of sites in scope of policy Option 2: at present, 60 duty holders in the non-civil nuclear sector carry out HIREs based on current Schedule 2 values, and this number has not changed much over the years. REPPIR Schedule 2 values will be updated in line with latest scientific data and the methodology will be revised in line with best practice, but we do not anticipate an increase in the number of sites subject to REPPIR. This is because, firstly the Schedule 2 values are, and will remain based on conservative assumptions, and secondly off-site dose data from available HIREs show that some should not be carrying them out, so any “brought in” might be balanced by those “dropping out”.

Similarly, we have used a conservative assessment for all nuclear-licensed sites that they will *all* be subject to REPPIR and the need to carry out a HIRE and a dialogue with the LA; whereas, at present, some sites do not undertake off-site planning for emergencies.

9.13.1.1 Sites that currently have a DEPZ: currently in the UK there are 36 licensed nuclear sites (defence and civil). For these, the ONR has determined that 14 civil sites have detailed emergency planning zones. It is worth noting that some detailed emergency planning zones serve more than one site.

9.13.1.2 Number of sites that will undertake outline-only planning: lower range number (30 sites): This is based on all non-defence nuclear-licensed sites requiring off-site planning and a very small number of non-nuclear sites being required to do so. For the non-nuclear sector, this is based on their current HIRE returns to HSE. The majority of HIREs where no off-site plan is required presently shows postulated doses to the public of nearer 1mSv than 5mSv. Of the reports which contain specific doses, only two are at a dose level near the current 5mSv cut off. Several are also below 1mSv (the public dose limit) for which off-site planning would not be proportionate.

Upper range number (c.80 sites): This number assumes that all sites which do not already have detailed emergency plans have to undertake outline planning. This is a very unlikely scenario (see lower range reasoning above) but we have included it to provide an upper limit.

Table 7 Total monetised costs of Option 2 for sites with and without off-site planning

	Additional costs incurred due to Option 2		Discussion
	Low Scenario (£)	High Scenario (£)	
Total costs from establishing plan	18,500	73,800	<ul style="list-style-type: none"> This will be the cost to the LA of conversations with the operator where standard distances are not appropriate. The dialogue will inform whether the LA needs to do more in terms of managing any release; and to determine whether the dutyholder needs to do more, either general planning or detailed planning. There could be

			<p>dutyholders who, following the discussion with their LA, may determine that the potential dose release is so low that the site probably requires no additional planning. For such sites, they will still have to incur the cost of discussing their HIRE with the LA, but going forward, they won't have any on-going costs related to the planning off-site. Work with stakeholders during consultation will test this.</p> <ul style="list-style-type: none"> Assuming this initial dialogue takes on average one day equivalent, involving one LA and one industry staff equivalent, this cost will be £750 based on available wage cost data. A 20% confidence interval, based on internal guidance has been used to reflect the uncertainty around the length of time needed for these discussions, whether or not LAs will require external expertise and this assumption will be tested during the consultation. This is in addition to the cost to the operator of doing a HIRE for the site in question, we assume they already do this. It is assumed all sites have to do this (i.e. they will all have off-site releases over 1mSv).
Total costs from outline planning	450,000	1,230,000	<ul style="list-style-type: none"> This cost is based on extendibility workshop costs as we consider that it will be an analogous exercise. The sensitivity around this assumption is driven by whether a site would carry out light-touch or extensive planning, thus face the lower bound (£5,000) or the upper bound (£15,000) of the assumed range on the cost of planning The upper range is indicative of a scenario where the highest number of sites undertakes more substantial planning.
Total costs from increased cost of off-site planning	24,600	98,500	<ul style="list-style-type: none"> For sites that already complete off-site plans, they will face an uplift in costs as set out in Table 5.
Total costs additional outline and detailed planning at sites which have already have DEPZs	70,000	210,000	<ul style="list-style-type: none"> We have used the same assumptions on costs of outline planning as above for the 14 sites which already have off-site planning. This may be pessimistic as it does not take into account the possibility of cross subsidisation.
Total cost of Policy 2	563,000	1,612,300	

9.14 Only including civil sites: we have not included the costs for defence sites because this cost will not fall to industry. LAs can re-charge for their work on off-site planning, but these costs are met by the MOD who operate these sites.

9.15 Familiarisation costs: as with Option 1, all duty holders will face some degree of familiarisation costs as a result of changes to REPIR, we assume these will be one-off costs. We consider that, in spite of the policy differences, the familiarisation costs for this option will be similar to Option 2. This is because while this is a more complex option (to allow flexibility) than Option 1, it is more similar to the current system and refines on current risk-based processes rather than introducing a deterministic approach.

9.16 Non monetised benefits: as with Option 1, the main non-monetised benefit of this approach, compared to the status quo, is the commensurate planning for the full range of emergencies (up to and including unforeseen, more severe emergencies).

9.17 Compared to the approach in Option 1, this approach is more flexible and pragmatic. This allows local planners to take decisions based on the relative benefit (or harm) of attempting to put in place countermeasures. Linked to this, local planners can also take advantage of synergies with generic arrangements which can put downward pressure on costs.

9.18 This option is also a less disruptive change for industry, building on current arrangements rather than introducing an entirely new system.

9.19 There may also be savings to be made as a result of the review of existing HIRE/ RoA process to ensure that the most effective and efficient approach is taken, that, where appropriate, utilises existing information rather than produces new information and provides the right information on which Local Authorities can base their plan. The magnitude of these savings has not yet been quantified because the details of the process are being reviewed by government (with input from stakeholders).

Uncertainties

10. There is a degree of uncertainty about the costs involved in this impact assessment which is driven by the following factors:

- Availability of current cost data: Government has no oversight of current costs recharged to operators by LAs. This is done in a non-standard way on a site-by-site basis. This makes the starting point for understanding additional costs less certain.
- Cost of outline planning: We have used stakeholder experience of extendibility assessments to inform these costs, but recognise this may not be accurate.
- The kind of planning commensurate for each site: as this will be determined on a site-by-site basis for Option 2, according to their hazard identification and risk evaluation process, or according to a new categorisation system for Option 1, we have used assumptions based on current determinations which are made under different thresholds.

We will use the consultation process to address these gaps for the final stage impact assessment.

Preferred option

10.1 The government's preferred option is Option 2 – a combined approach between deterministic and risk-based planning. We consider that this combines the value from the maturity of our current system with the need for change required by BSSD. We recognised that the net present values and net cost to business for both options are very similar and, especially given uncertainties, do not suggest a preferred option.

However, option 2 is preferred because there are:

- Substantial non-monetised benefits associated with option 2, in particular the possibility to synergise work on detailed and outline planning and other benefits of a risk-based approach. We expect this to result in significant savings and will seek evidence on this during consultation.
- Substantial non-monetised costs from the unfeasibility of option 1, in particular the imposition of blanket planning requirements that could be impractical and extremely costly in densely populated areas. Again, we will seek evidence on this during consultation and expect to see an increase in costs for this option.

Total Net Present Value	Best Estimate	Low	High	Net Cost to Business
Policy Option 1	-£19m	-£34m	-£2m	£0.1m
Policy Option 2	-£17m	-£30m	-£4m	£0.1m

10.2 We recognise implementation costs are fairly uncertain at this stage and welcome input from stakeholders to inform the final IA. However, we consider that while there may be some increase in

costs for individual sites, these should be modest and lower than the Option 1 approach (both of which meet the BSSD requirements).

Better regulation considerations

10.3 The measures within this IA are out of scope business impact target and the one in three out rule as the government is transposing an EU Directive.

10.4 We are not gold plating:

- We will not implement before the transposition deadline
- Furthermore, we intend to adopt approaches to implementation that are as flexible as possible to put downward pressures on costs. We will work with the regulators (ONR and HSE) to ensure that the from the old approach to off-site emergency planning to the new requirements for EP&R arrangements do not place any unnecessary burdens on operators and LAs.

ANNEX A

Changes to REPPIR with no costs associated with them (beyond familiarisation costs)

Reference Levels

1.1. In the BSSD 2013, the concept of reference levels is introduced. These are the first year, residual dose a person receives in an emergency situation. The purpose of their introduction is to achieve an optimised response over all exposure pathways and countermeasures. There is currently no specific UK legislation establishing reference levels in the event of an emergency.

1.2. However, there are other relevant guidelines in the UK, in particular Emergency Reference Levels (ERLs). These are the dose averted (in the first few days) by specific countermeasures. ERLs are aimed at reducing early exposures to balance the benefits and costs of each early countermeasure separately. ERLs are therefore a planning tool for countermeasures in effect.

1.3. The introduction of reference levels creates gaps in current requirements which include:

- no concept of Reference Levels in the UK's legislative or administrative arrangements
- no arrangements for the measurement or communication of Reference Levels
- ERLs do not capture the 'residual dose' in light of countermeasures taken over the course of a longer time frame.

1.4. Transposition will be done with maximum flexibility as this could be needed as part of the response to a radiological emergency. Legislation will be at a high level, requiring off-site plans take into account Reference Levels (which may be renamed in practice to avoid confusion) during a response.

Lessons learned

1.5. Presently, an operator's emergency plan and the off-site emergency plan must be reviewed and tested at least once every three years.

1.6. Current REPPIR requires the review to take into account:

- changes occurring in the work with ionising radiation to which the plan relates;
- new technical knowledge;
- 'knowledge concerning the response to radiation emergencies'; and
- any material change to the assessment on which the plan was based since it was last reviewed or revised.

1.7. The BSSD 2013 requires that response plans consider 'lessons learned from past emergency exposure situations and the results of participation in emergency exercises at national and international level', REPPIR guidance and the National Nuclear Emergency Planning and Response Guidance (NNEPRG) state that the review and testing process must take account of lessons identified and learned elsewhere.

1.8. The UK has a robust process in place that implements this requirement. As part of the UK's Emergency Management System, BEIS manage the lessons learned process for the UK and facilitate a Lessons Learned Working Group, which includes regulators, representatives from the nuclear industry, LAs and other government departments and all other key stakeholders affected. Stakeholders have confirmed that this more specific requirement will not present any additional cost implications but these assumptions will be tested further during formal consultation.

Information and training for emergency workers

1.9. Currently, employers of 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 them with suitable and sufficient information, instruction and training. 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 sufficient for them to know the risk to health and the precautions to take.

1.10. In addition, the BSSD 2013 requires those emergency workers identified in an emergency response plan to have their training and information regularly updated, supplemented appropriately according to the specific circumstances in the event of an emergency.

1.11. Current REPPIR guidance states that refresher training should be provided and stakeholders confirm that they already regularly provide this. On 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.

1.12. To provide clarity for stakeholders we propose placing a suggested frequency for the provision of refresher training in guidance. We do not anticipate any costs as stakeholders have confirmed they are already compliant with the proposed change.

Communication channels to include new technologies

1.13. In the event of a radiation emergency, the off-site emergency plan must establish a system for managing information and its effective communication to the public. Presently, REPPIR requires the public to tune into "*radio and television ...*". In line with the BSSD 2013, other channels as well as radio and TV may be appropriate for example, internet or social media. Dutyholders will have a choice in determining the method of communication appropriate to the circumstances of the area and the emergency itself.

Therefore, it is assumed there are no cost impacts of this change, aside from familiarisation costs which are considered at paragraph 8.8 on familiarisation costs.

Changes not associated with BSSD and with no costs associated with them (beyond familiarisation costs in paragraph 8.8)

1.14. These changes are intended to clarify the requirements of the regulations and have been requested by stakeholders to make the regulations clearer, removing uncertainty and potentially reduce costs.

Terminology – Designated authorities

1.15. To further align REPPIR with the Control of Major Accident Hazards 2015, the term 'emergency services' will be replaced with the term 'designated authorities' where relevant. These are generally Category 1 Core responders (as defined in the Civil Contingency Act 2004²) and include: the police forces, British Transport Police, fire authorities, ambulance services, Marine and Coastguard Agency, LAs, health bodies, ambulance service providers, port health authorities, public health agencies, NHS England, government agencies (which includes the Environment Agency, Scottish Environment Protection Agency and Natural Resources Wales). Stakeholders will be consulted to ensure all required services are covered in any final list provided in the legislation.

1.16. This clarifies who should attend testing exercises with respect to off-site plan emergency plans so they can be properly tested. These services should already be attending tests under current regulation, so there will be no additional costs. There will be a familiarisation cost, which will be tested further during formal consultation.

Requiring an adequate test of plans

1.17. We plan to clarify the testing requirement in REPPIR so an "an adequate test" (rather than just a "test") of plans is undertaken. This is to clarify that a poor test of a plan does not meet the intention of the regulations. This should not incur additional costs as the likelihood of this occurring would be low as

² See: [Civil Contingencies Act 2004](#)

dutyholders already comply with this requirement. If the regulator deems a test not be adequate and requests a retest of the plan, this would incur costs but we consider that this is unlikely.

1.18. Where the test of the off-site plan considers new elements introduced under BSSD such as testing of the new outline plan and the transition to recovery then there is a potential to increase costs (but these are included in discussion of options).

1.19. We are minded to retain the ability in new REPPIR for the LA to request the recovery of costs from operators for other responders (including the emergency services) required in the exercise preparation and testing of the off-site emergency plan will also incur costs.

Disapplication of dose limits

1.20. Currently, there is a lack of clarity with respect to the disapplication of the dose limits in the Ionisation Radiation Regulations (IRR 99). On the one hand, they can only be dis-applied in the event of an emergency; elsewhere they can be dis-applied during intervention to prevent an accident escalating to an emergency. The intention of the IRR is to dis-apply dose limits if there is a possibility this could help stop an accident before it escalates to an emergency, therefore there is a clear benefit to removing any ambiguity.

1.21. In addition, at some sites there are certain reasonably foreseeable radiation emergencies which would require the limits to be dis-applied to enable legal intervention to terminate the event or to save lives. While having severe consequences on the site, these situations would not lead to doses to members of the public and hence could not be classed as a radiation emergency. Therefore, it is proposed to extend the provision to dis-apply dose limits to cover accidental criticality emergencies, which simply legislates for what would happen in practice. Costs are therefore familiarisation costs.

ANNEX B

The table below demonstrates comparative appraisal of both policy options.

	Appraisal Summary Table					
Cost category	Option 1			Option 2		
	Qualitative appraisal	Relative change in cost burden	Monetised impact (where known)	Qualitative appraisal	Relative change in cost burden	Monetised impact
Maintaining Plans	Planning for more severe emergencies would in some cases simply build on existing planning for generic emergencies but for some Local Authorities may necessitate a whole new capability	Low	£1,000-£3,000	Planning for more severe emergencies would in some cases simply build on existing planning for generic emergencies but for some Local Authorities may necessitate a whole new capability	High	£1,000 - £4,000
Stable Iodine	For sites situated in sparsely populated locations an increase in the planning zone would not result in a large increase in population and therefore costs. For sites located near conurbations, this may lead to large increase population and costs.	High	£0-£247,500	Existing off-site planning taking into account less likely emergencies and planning out to greater distances	Low	£100 - £500
Information	Population increases lead to increased cost from communication with a larger target area, special provisions will also have to be taken to reach more difficult areas	Medium	£700-£3,500	Existing public information systems being updated taking into account for potential greater distances	Medium	£400-£1,400
Testing Plans	We expect tests to increase in logistical and conceptual complexity	Low	£300-£1,100	Planning for the consequences of various and less likely events within current detailed emergency planning zones where these have previously not been considered	Medium	£300-£1,100
Total Additional Costs	Option 1			Option 2		

Total costs for 14 UK Sites with DEPZ	£28,000	£3,571,000		Total costs from establishing plan	£18,500	£73,800
Illustrative only: 16 sites with outline planning	£240,000	£320,000		Total costs from outline planning	£450,000	£1,230,000
Total cost of policy 1	£268,000	£3,891,000		Total costs from increased cost of off-site planning	£24,600	£98,500
				Total costs additional outline and detailed planning at sites which have already have DEPZs	£70,000	£210,000
				Total cost of Policy 2	£563,100	£1,612,300