



Office for  
Nuclear Regulation

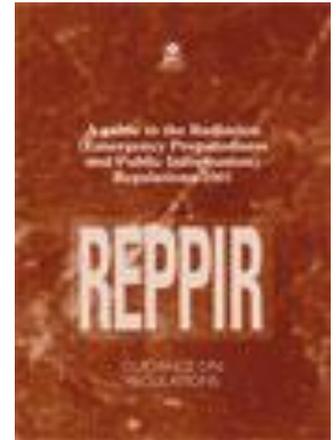
# **Off-Site Emergency Planning Area – ONR’s determination principles**

**18 January 2018, Dungeness Site Stakeholder Group**

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## Purpose of the REPPIR defined area

- Defined by ONR when public may be affected by **reasonably foreseeable radiation emergencies**.
- Local Authority must plan to **restrict doses so far as is reasonably practicable**.
- Operator must provide appropriate prior safety information.

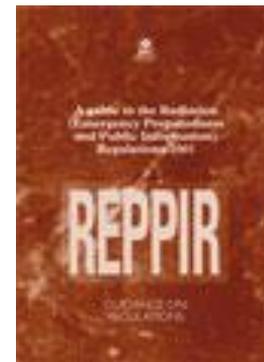


# ONR steps to derive an off-site emergency planning area:

## STEP 1

A technical assessment of the operator's assessment

- Does ONR agree with the operator's assessment of what are the most significant radiation accidents?
- Does ONR conclude that there can be a reasonably foreseeable radiation emergency?
- If yes, to what extent will public receive doses  $> 5\text{mSv}$  (5 mSv dose criterion (REPPIR Schedule 1))?



## STEP 2

An assessment of practical and strategic factors for emergency planning and countermeasures .....



## ONR's revised principles: Practical and strategic factors (STEP 2)

- A Local geographic, demographic and practical implementation factors
- B Avoidance of Intersecting local communities
- C Inclusion of Immediately adjacent vulnerable groups
- D International good practice
- E Credibility and confidence in the extent of the area.
- F Benefits and dis-benefits of countermeasures
- G Other site specific factors

# ONR's revised principles: Area determination (STEP 2)

## A Local geographic, demographic and practical implementation factors

The relevant local authority is consulted on the basis that it has significant 'local' knowledge and has the responsibility for development and, in the highly unlikely event that it is ever necessary, implementation of the off-site emergency plan.

(Note: The local authority also has the legal duty to undertake consultation in relation to the off-site emergency plan as provided for under REPPiR Regulation 9(12).)





## ONR's revised principles: Area determination (STEP 2)

### **B Avoidance of bisecting local communities**

- ONR's preference is to avoid the bisection of small settlements or communities
- Bisection of small communities has raised concerns in terms of public perception, and also has the potential to affect the effectiveness of implementation of countermeasures.
- Bisection may sometimes be unavoidable as there are potential drawbacks in terms of the size of the protection challenge and impact on the effectiveness of the off-site emergency plan.



# ONR's revised principles: Area determination (STEP 2)

## B Avoidance of bisecting local communities





## ONR's revised principles: Area determination (STEP 2)

### C Inclusion of immediately adjacent vulnerable groups

Vulnerable groups (e.g. care homes, schools, camping and caravan sites, itinerant populations, etc) located close to the area should be provided for in the same manner as those located within the area. (The definition of 'vulnerable' groups being that adopted by the relevant local authority.)





# D International good practice

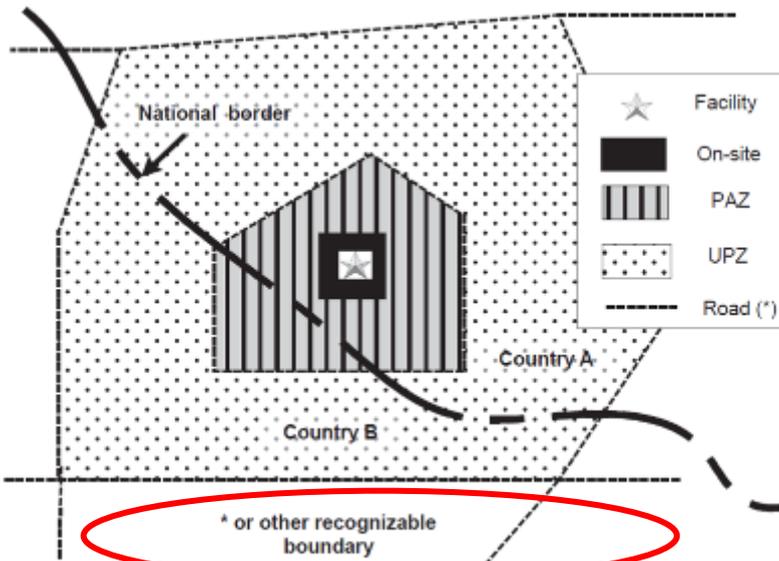


FIG. 2. Emergency zones.

TABLE 8. SUGGESTED EMERGENCY ZONES AND AREA SIZES<sup>a</sup>

Facilities	Precautionary action zone (PAZ) radius <sup>b,c</sup>	Urgent protective action planning zone (UPZ) radius <sup>d</sup>
<i>Threat category I facilities</i>		
Reactors >1000 MW(th)	3–5 km	5–30 km <sup>e</sup>
Reactors 100–1000 MW(th)	0.5–3 km	5–30 km <sup>e</sup>
A/D <sub>2</sub> from Appendix III is $\geq 10^5$ <sup>f</sup>	3–5 km	5–30 km <sup>e</sup>
A/D <sub>2</sub> from Appendix III is $\geq 10^4$ – $10^5$ <sup>f</sup>	0.5–3 km	5–30 km <sup>e</sup>
<i>Threat category II facilities</i>		
Reactors 10–100 MW(th)	None	0.5–5 km
Reactors 2–10 MW(th)	None	0.5 km
A/D <sub>2</sub> from Appendix III is $\geq 10^3$ – $10^4$ <sup>f</sup>	None	0.5–5 km
A/D <sub>2</sub> from Appendix III is $\geq 10^2$ – $10^3$ <sup>f</sup>	None	0.5 km
Fissionable mass is possible within 500 m of site boundary <sup>g</sup>	None	0.5–1 km

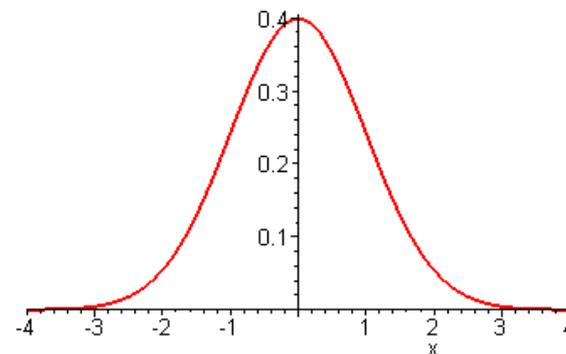
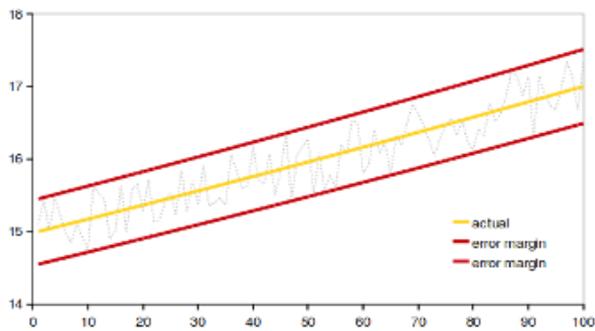
<sup>a</sup> The radius is the approximate default distance from the facility at which the boundary of the zone should be established. Variation by a factor of two or more during application is reasonable. A different distance should be used when this is substantiated by a detailed safety analysis.

<sup>b</sup> The suggested radii are the approximate distances for which the acute (2 day) dose to the bone marrow or lung could (with a very low probability) approach levels that are life



## E Credibility and confidence in the extent of the area

- The area should be of sufficient extent so as to provide for a meaningful off-site emergency plan.
- It should incorporate an appropriate degree of conservatism and pragmatism, and provide for a credible and effective response in the event of a reasonably foreseeable radiation emergency.

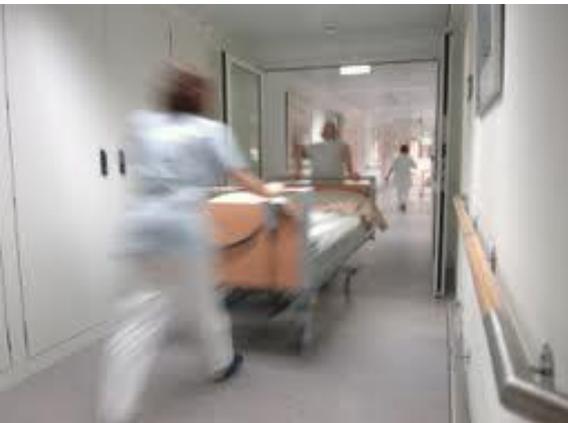


## F Benefits and dis-benefits of countermeasures



Countermeasures can, in some circumstances, convey risks as well as benefits to the individuals to whom they may be applied. ONR considers an appropriate balance between the benefits of dose aversion and the potential dis-benefits associated with implementing immediate countermeasures in a radiation emergency across too wide an area.

(Note - although ONR do consider the application of countermeasures within these principles, in relation to the detail of what countermeasures are necessary in a specific off-site plan, the Local Authority will seek advice from PHE-CRCE regarding this, not ONR.)





## **G Other site specific factors**

ONR will also consider, in determining REPPIR off-site emergency planning areas, any additional site-specific factors that it considers relevant on a case-by-case basis.

