



**Bradwell Emergency Arrangements**

**Bradwell: Application for Approval under LC 11(3) of revised Bradwell Emergency Arrangements for C&M**

Project Assessment Report ONR-SDFW-PAR-18-031  
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## EXECUTIVE SUMMARY

### Approval of the revised Bradwell Accident and Emergency Arrangements

#### Permission Requested

Magnox Ltd (the licensee) has written to the Office for Nuclear Regulation (ONR) requesting approval of proposed changes to the Bradwell site Accident and Emergency Arrangements.

#### Background

Magnox Ltd. is in the process of decommissioning the Bradwell site. The site ceased generating in 2002, and all fuel has been removed from the site. The site's intermediate level waste has been processed and placed into interim storage and the mobile low level waste collected and processed offsite. Consequently, most of the nuclear hazard has now been removed.

The licensee has previously demonstrated to ONR's satisfaction that a radiation emergency as defined by the Radiation Emergency Preparedness and Public Information Regulations (REPPIR) Regulation 2(1) is no longer reasonably foreseeable, and consequently the requirements for an Operators emergency plan and off-site emergency plan are no longer required by REPPIR (Regulations 7 and 9).

Commensurate with the change in the hazard profile, the licensee has proposed changes both to its organisation and its arrangements for dealing with incidents. As required by Licence Condition 11, the licensee has written to ONR to request approval of the revised Bradwell Emergency Arrangements.

#### Assessment and inspection work carried out by ONR in consideration of this request

This application is the latest in a number of previous applications to revise the site's emergency arrangements as the risks from the site have reduced commensurate with the progress of the decommissioning activities on the site. This has included the withdrawal from REPPIR offsite emergency plan (LI 510) and the adoption of out-of-hours office working (LI 517).

I am satisfied that the change to the arrangements to account for the entry to Care and Maintenance (C&M) operations is reasonable. They represent an extension of the existing arrangements to cover the cessation of routine daily working on the site and the transition to nominally unmanned status with remotely managed periodic site attendance. I consider the revised arrangements are structured appropriately for the site. The simplified emergency response organisation reflects the longer response times which can now be afforded for responding to incidents on the site.

The licensee has demonstrated the arrangements during the C&M commissioning tests, and ONR judged this to be an adequate demonstration which provides evidence that the licensee will retain adequate capability to respond to incidents on the site.

The changes to align the emergency and incident response arrangements in line with the decommissioning and C&M operations have been subject to assessment and approval by ONR and have resulted in a chain of Licence Instruments that are now permissioning changes to emergency arrangements on a site where there is little nuclear risk.

In view of the much reduced risk from the site and the cessation of routine daily working it seems disproportionate for ONR to continue with formal approval of the emergency arrangements. Magnox Ltd has committed to continued consultation with the regulatory

bodies and stakeholders prior to making any further changes and to extending invites to demonstrations and emergency exercises as appropriate.

Therefore, it is recommended that the Licensee is notified that ONR will suspend enforcement of the Specification until further notice, as has been done at other sites under similar circumstances. The Specification would remain in force and could be re-activated if circumstances occur that make it necessary. At the same time ONR will need to withdraw the extant LC 11(3) Approval to enable the licensee to alter or amend Bradwell's Approved emergency arrangements.

### **Matters arising from ONR's work**

There are no matters outstanding from ONR's assessment.

### **Conclusions**

I am satisfied that the revision to the Emergency Arrangements are justified, as the licensee has previously demonstrated to ONR's satisfaction that a nuclear emergency is no longer reasonably foreseeable, and the revised arrangements are structured proportionately to cover the reduced hazards remaining on the site during Care and Maintenance.

I am satisfied that the licensee's revised proposals meet the requirements of the Licence Conditions (LC's) and Ionising Radiation Regulations (IRR17), Regulation 13 Contingency plans, and are in compliance with ONR's published standards and guidance.

I am satisfied that the nuclear risks from the site in C&M are so low that continued formal approval of the emergency arrangements is disproportionate and this requirement should be suspended during C&M.

I consider that the proposed Emergency Arrangements are proportionate to the remaining nuclear risks from the site.

### **Recommendation**

I recommend that ONR:

- Issues LI 519 withdrawing LI 517, LC 11(3) Approval, so that the licensee can amend or alter Bradwell site's emergency arrangements (Bradwell Accident and Emergency Arrangements Issue 2 dated 20 April 2017).
- Issues a covering letter, worded to suspend the requirement to obtain ONR approval of any future alterations or amendments of Bradwell site's emergency arrangements until further notice.

## LIST OF ABBREVIATIONS

C&M	Care and Maintenance Operations
HOW2	(Office for Nuclear Regulation) Business Management System
HSE	Health and Safety Executive
IRR	Ionising Radiation Regulations
ISF	Interim Storage Facility
LC	Licence Condition
LLW	Low (radioactive) Level Waste
MxL	Magnox Ltd.
ONR	Office for Nuclear Regulation
REPPIR	Radiation Emergency Preparedness and Public Information Regulations
RoA	Report of Assessment
SAP	Safety Assessment Principle(s)
SQEP	Suitably Qualified and Experienced Persons

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## PERMISSION REQUESTED

1. Magnox Ltd (the licensee) has requested the Office for Nuclear Regulation's (ONR) 'Approval' under Licence Condition 11(3) for its proposed changes to the Bradwell site Emergency Arrangements, (Ref. 1). This revision is documented in issue 1 of the Bradwell Incident Management Arrangements, dated 20 March 2018 (Ref. 2).
2. The licensee currently has accident and emergency arrangements (Ref. 3), which is approved at issue 2. Licence Condition (LC) 11(3) requires the licensee to ensure that no alteration or amendment is made to an approved emergency plan unless (NR approves that alteration or amendment. This report presents the basis for ONR approval of the licensee's proposed new arrangements.
3. The proposed changes to the plan have been through the licensee's due process and have been considered and endorsed by its Nuclear Safety Committee, (Ref. 4).

## 1 BACKGROUND

4. Magnox Bradwell site is in the process of decommissioning. The site ceased generating in 2002, and the reactors and fuel ponds completed defuelling in 2005. The site has now completely removed the radiological waste and either stored it in approved containers in the Interim Storage Facility (ISF) or exported it from site for storage at the low level waste (LLW) facility in Cumbria. Consequently, most of the nuclear hazard has now been removed.
5. After defueling had been completed the licensee provided ONR with a revised Report of Assessment (RoA) (Ref. 5), as required by the Radiation Emergency Preparedness and Public Information Regulations (REPPPIR) Regulation 5(1) and 6(4), (Ref. 6). This RoA concluded that it is not reasonably foreseeable that a member of the public could be exposed to a dose in excess of 5 mSv as a result of a radiation emergency.
6. Following assessment, (Ref. 7), ONR agreed that a radiation emergency as defined by REPPPIR Regulation 2(1) is no longer reasonably foreseeable at Bradwell, (Ref 8), and consequently an operators' emergency plan and off-site emergency plan are no longer required by REPPPIR (Regulations 7 and 9). In 2014 ONR approved a revision to the licensee's emergency plan which removed the requirement to deal with an off-site nuclear emergency (Ref. 9).
7. The licensee now intends to adopt care and maintenance (C&M) working where the site will operate through a period of minimum manning prior to the intended remote site operation. This requires the incident arrangements to be updated to account for the site being managed remotely and normally unmanned whilst still complying with the duties the licensee still has for managing incidents under the Ionising Radiation Regulations (IRR17) Regulation 13 Contingency plans and Licence Condition 11 requirements. The requirements of the LCs and IRR17 still apply and the licensee must make and implement adequate arrangements to deal with incidents on site and to prepare contingency plans for reasonably foreseeable radiation accidents.
8. As required by LC11 (3), the licensee has written to ONR to request approval of the revised Emergency Arrangements, (Ref. 1).

## 2 ASSESSMENT AND INSPECTION WORK CARRIED OUT BY ONR IN CONSIDERATION OF THIS REQUEST

9. I have assessed the licensee's request and reviewed the previous submissions and correspondence (Trim Folder 4.4.2.19868.). I am satisfied that the revised arrangements are a reasonable extension of the current arrangements to adapt them for minimum manning / remote site operations in C&M.

## 2.1 KEY CHANGES TO EXISTING ARRANGEMENTS

10. In C&M operations the site is in a quiescent state with the safestore and ponds facilities in an inert state without power or lighting. There are no active physical processes being undertaken and no storage at pressure or of harmful or flammable chemicals. Therefore, there are no means by which a serious incident could spontaneously develop. The site is fitted with a remote monitoring and alarm system which was inspected during the ONR readiness inspections (Ref. 15). The demonstration showed that the system allows for monitoring of the site remotely from Sizewell A as well as if the guards were on site at Bradwell.
11. The ISF remains an operational store during the period of C&M up to the point that the geological disposal facility comes on line. Due to the decision to locate intermediate level waste from the other sites in the region (Sizewell A and Dungeness A) the ISF will still be receiving waste packages in the first couple of years of operation in C&M. Initially the site will have a permanent security presence and the site will be up-manned to deal with package receipts. It is intended that the package transport will be done in batches on a periodic basis to make the work feasible and to practise the remote operating and management processes and procedures.
12. The submission is consistent with arrangements suitable for a very low hazard site in remote operation. In my assessment of the proposed Emergency Arrangements I have considered the differences between the extant plan, (Ref. 3), and proposed new arrangements, (Ref. 2). I have confirmed that the proposed arrangements are compliant with the requirements of ONR guidance, (Refs 10 and 11).
13. The key changes from the current approved emergency plan are in recognition that the site will be managed remotely from Sizewell A and that unless an incident occurs during the period when the site is open and a work party is busy on the site, the response will be managed from Sizewell A in its initial stages.
14. The actual processes and procedures contain similar provisions as the current ones and the roles and responsibilities of the key responsible persons remain. One new role has been introduced following learning from the exercises conducted to date. This is the Emergency Services Liaison Co-ordinator, who is responsible for ensuring any responding emergency services are provided with access to site and the relevant information on the incident and any site hazards.
15. The licensee demonstrated the proposed emergency arrangements during C&M commissioning testing (Ref. 19) and ONR judged them to be adequate.

### Documented Arrangements

16. The revised arrangements are structured for sites where there is remote unmanned operation punctuated by periods of manned operations for waste handling and maintenance operations.
17. Where additional specific care and maintenance tasks are required the arrangements include provision for additional response capability if necessary. The basis of the proposed arrangements is that tasks are risk assessed. Where foreseeable accidents are identified that require actions to mitigate their effects or reduce harm to the public, workers and environment, then contingency plans will be documented, resourced, equipped and rehearsed as required. The following summarises the key points:
  - The site has been fitted with a comprehensive remote security monitoring system that doubles as a plant alarm detection system, (entry to the facilities, presence of water in the voids).

- All information and procedures required to plan interventions is stored in a software based data management and retrieval system known as the 'Knowledge and Information Data Library' (KIDL).
  - The radiation accident contingency plans have been drawn up in compliance with Regulation 13 of Ionising Radiation Regulations 2017.
  - Where additional emergency response may be required by site specific tasks or risk assessment, further contingency plans may be produced by the task owners (e.g. when projects carry out tasks where no contingency plan exists).
18. I consider the revised arrangements are structured appropriately for the site in remote operation. If additional specific care and maintenance work is required (for example, post storm damage repairs or water ingress the voids which may temporarily increase risks) any additional specific emergency capabilities required will be made available at site for the duration of the task. The arrangements are detailed in the Bradwell site incident management arrangements (Ref. 2).

### **Emergency Organisation**

19. The site emergency organisation has been revised to reflect C&M operations, and account for the remote management of the initial response. The ability for the licensee to call upon emergency services or other external organisations in the event of an emergency remains unchanged.

### **Emergency Facilities**

20. The following arrangements are proposed in relation to Emergency Facilities:
- The site will maintain control and coordination of site emergencies from the access point and guard house complex from which an incident can be managed. This location will have the necessary surveillance systems, documentation and first response equipment required. This documentation and equipment will be managed and maintained through the work management process. The site will maintain equipment for use during an incident and bring any specific equipment required to site as part of the setting to work process.
  - A sophisticated monitoring and alarm system is available on the site in the security lodge at the access point and work 'guardians' are stationed at the access control point for the relevant facility being worked on, in with both emergency and first aid equipment.
  - Initially the site will remain permanently manned by guards and remote operations will only commence after agreement from all of the regulatory bodies, the Nuclear Decommissioning Authority and Government bodies.

### **Response Times**

21. Response times are considered to be adequate for the following reasons.
- The detection time in remote operations should be no different from the case where the security guards are actually on the site due to the advanced remote monitoring and intruder detection systems.
  - The period of continued security presence will allow the arrangement to be thoroughly exercised and proven before transitioning to unmanned operations.
  - Response times for the duty controller and emergency services coordinator remain unchanged from those prevalent in the current systems 'out of hours' working
  - Response times for external services to the site remain unchanged from when the site is manned.

- The site's sensitive areas with regard to radiological and asbestos risks are protected using a 'fortress' approach. This means that the areas are so robustly secured that it is anticipated a that an external response can be mounted effectively before any break in to these areas occurs.
22. The site completed defuelling in 2005 and has now remediated all of the radiological waste on the site into approved containers for storage in the interim storage facility, (or else exported from site for processing by third party contractors for interim storage at the LLW repository in Cumbria). As there are no active operations on the site, nor any reservoirs of stored energy (high pressure / high temperature) there are no incidents that require an immediate emergency response. Should a situation develop such as water penetration into the voids, the safety case demonstrates that it can be addressed as a non-urgent matter.
23. Discussions were held with the licensee which confirmed that my initial observations and comments had already been addressed in the arrangements, and these were to be included within this submission (Ref. 15). The submitted documentation therefore already addresses all of ONR's comments.
24. The assessment was carried out in consultation with ONR Security Inspectors (Ref. 16).

## 2.2 OTHER CONSIDERATIONS

25. I considered if an approval was still necessary for the Bradwell Accident and Emergency Arrangements, and judged that due to the very low levels of nuclear risk now posed by the site, it is appropriate to consider the suspension of formal regulatory control of the Emergency Arrangements. Magnox has committed to advise the regulatory bodies of any subsequent changes to the incident management arrangements and to extend invites to any demonstrations of them. (Ref. 20)
26. The licensee has undertaken a comprehensive programme of local and site wide exercises to ensure staff are familiar with the new arrangements and can respond effectively. I have reviewed the training programme and the SQEP / training records associated with Emergency Arrangements and judged these to be adequate, (Ref 12).
27. The licensee has duly consulted its Nuclear Safety Committee at a meeting on 12 March 2018 (Ref 4), which endorsed the proposed arrangements.
28. The licensee has consulted with the external 'blue light' emergency services and local authorities through the Emergency Planning Consultative Committee. There are no matters outstanding from this consultation, Ref. 12).
29. I have reviewed examples of the site contingency plans (Ref. 13), to confirm these contain appropriate detail and are consistent with the revised arrangements. I judge these contain the relevant information expected in terms of response arrangements, roles and training.
30. Overall, I am content that Bradwell has adequately implemented its Emergency Arrangements, to support the provision by ONR of the Approval Licence Instrument.
31. I have drafted a licence condition 11(3) Approval Licence Instrument, for the withdrawal of the Approval of the previous Bradwell Emergency Plan. I have drafted a letter to notify the licensee that ONR will not be seeking any further approvals under the 11(2) Specification (Ref.17). The Licence Instrument complies with the extant ONR guidance for the preparation and issue of Licence Instruments (Ref. 14) and is consistent with others issued to Sellafield Limited under similar circumstances (Ref. 18).

## **2.3 SUMMARY**

32. Overall I consider the revised Emergency Arrangements, (Ref. 2), to be a suitable document, which aligns with ONR's guidance. I see no reason to withhold permissioning.

## **3 MATTERS ARISING FROM ONR'S WORK**

33. There are no matters arising from ONR's assessment.

## **4 CONCLUSIONS**

34. I am satisfied that the revision to the Emergency Arrangements are justified as the licensee has previously demonstrated to ONR's satisfaction that a nuclear emergency is no longer reasonably foreseeable, and the revised arrangements are structured proportionately to a site in C&M.
35. I am satisfied that the nuclear risks remaining from the site have been reduced to a level where continued approval of the arrangements is no longer necessary.
36. I consider that the proposed Incident Management Arrangements will continue to provide suitable and sufficient capability to enable the licensee to safely deal with a site incident should the need arise.

## **5 RECOMMENDATIONS**

37. I recommend that ONR:
- Issues LI 519 withdrawing LI 517, LC 11(3) Approval, so that the licensee can amend or alter Bradwell site's emergency arrangements (Bradwell Accident and Emergency Arrangements Issue 2 dated 20 April 2017).
  - Issues a covering letter, worded to suspend the requirement to obtain ONR approval of any future alterations or amendments of Bradwell site's emergency arrangements until further notice.

## REFERENCES

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ONR-SDFW-CR-18-338: Bradwell Care and Maintenance: Attendance at commissioning tests 2A, 2B, 3, 4, 8 and 16, Dated 24<sup>th</sup> July 2018 TRIM Ref.2018/317059
20. Letter BWA 53398: Request for approval under Licence Condition 11(3) of the amendment to the Bradwell Emergency Arrangements Dated 25 September 2018 TRIM Ref. 2018/310274.