European Offshore Wind Deployment Centre
Environmental Statement

Chapter 7: Offshore Ordnance

A project part-funded by the European Union under the European Economic Plan for Recovery in the field of Energy

7 ORDNANCE

7.1 Introduction

1 This section outlines the information available with respect to unexploded ordnance (UXO) across the proposed European Offshore Wind Deployment Centre (EOWDC) site. The Health & Safety at Work Act and the construction (Design & Management) Regulations (1994) do not require UXO studies to be undertaken. In light of history of ordnance in Aberdeen Bay area, the Applicant commissioned UXO threat assessments and developed mitigation strategies to ensure the safety of those working on the project.

7.1.1 Key Guidance Documents

2 In 2009, CIRIA (the construction industry research and information association) produced a holistic UXO risk management framework for onshore UXO: "Unexploded ordnance (UXO) A guide for the construction industry". While not directly applicable to offshore UXO, the same principles apply in the marine environment (where no formal guidance exists at this time).

3 This has therefore been applied to the studies undertaken in 2010 in conjunction with marine and renewable experience (6 Alpha, 2010).

4 Other sources of guidance included:

- Maritime Coastguard Agency (MCA)
- British Marine Aggregate Producers Association (BMAPA)
- Health & Safety Executive (HSE)

7.1.2 Data Information and Sources

5 Three studies have been undertaken to inform the project on the risk of UXO across the site. The first was undertaken in 2007 by BACTEC International Limited, and was a risk assessment for the area around Layout 011 (see Frame 4, Figure 2.3).

6 The second and third were completed in 2010 by 6 Alpha Associates, describing the UXO risk and then proposing possible mitigation methods.

7 These used the following data sources (6 Alpha, 2010):

- Royal Navy (Northern Diving Unit), Scotland
- The National Archives, Kew
- Naval Historical Centre, Portsmouth
- UK Hydrographic Office, Taunton
- 6 Alpha database

7.1.2.1 Project Reports

8 The reports written specifically for this project were:

- BACTEC International Limited (2007) Explosive Ordnance Threat Assessment of the Aberdeen Offshore Wind Farm
- 6 Alpha Associates (2010) Unexploded Ordnance (UXO) Risk Situation Report and Risk Assessment/Method Statement Review
- 6 Alpha Associates (2010) Unexploded Ordnance (UXO) Threat & Risk Assessment with Mitigation Strategy. Project: Aberdeen Offshore Wind Farm. This is also included as Appendix 7.1.

7.2 Baseline Assessment

9 Initially, the risk of encountering UXO was considered to be high (BACTEC, 2007). However, with the change in location, the majority of the site is now considered to be low risk, with a medium risk only occurring in a buffer around Black Dog Rifle Range.

10 There are a number of potential sources for UXO (BACTEC, 2007; 6 Alpha, 2010):

- military ranges (Royal Navy and British Army)
- munitions dumping grounds
- sea mines (British and German)
- anti-aircraft artillery (AAA) projectiles
- coastal gun batteries
- unexploded bombs
- wrecks
- convoy routes

11 While most of the ordnance is from World Wars (WW) I and II, it rarely becomes inert or loses effectiveness with age.

12 There are four firing ranges in the area (Figure 7.1), but only Black Dog Rifle Range is close enough to affect the proposed EOWDC (and two are beyond the extent of the figure). This facility was a WWII military land service ammunition site, and is now a small arms range.

13 There is one munitions dumping ground in the area, but this is directly east of Aberdeen (Figure 7.1) and considered too far south for munitions to have migrated to the proposed site.

14 There was a defensive mine field off the east coast of Scotland that was cleared after WWII, although clearance methods are not considered 100 % effective. However, this is 18 km from the proposed development and therefore too far away to be impacted.

15 Aberdeen was regularly bombed throughout WWII, and an AAA battery was deployed at Black Dog. However, the locations of any unexploded shells cannot be determined through desk study, and therefore must be acknowledged as a background risk across the whole area. The SS Archangel was sunk by bombs to the north of the proposed site (Figure 7.1) which confirms bombing activity in the area.

16 There have been no munitions wrecks identified in the area.

7.3 Impact Assessment

17 The 6 Alpha report presents a semi-quantitative risk assessment for the project. This classifies areas as Low (Tolerable or Partly Tolerable risk), Medium (Intolerable risk) and High (Highly Intolerable risk).

18 In the areas classed as Low, there is a "remote to possible" chance of encountering UXO, mainly from the background risk of unexploded bombs or AAA.

19 In areas classed as Medium, it is "likely to very likely" that ordnance would be encountered. These areas should be avoided if possible. If not, then a full UXO survey should be undertaken, including diver or ROV (remote operated vehicle) inspection of any finds. Two of the wind turbines are located within an area classed as medium.

20 In areas classed as High, it is "almost certain" that ordnance will be encountered, and these should be avoided.

21 Figure 7.1 shows the classification across the EOWDC site. The majority of the site is classed as Low, ie only a remote chance of encountering UXO. However, there is Medium risk in a buffer around the Black Dog Rifle Range, so it is considered highly likely that there is a chance of encountering UXO. This buffer encompasses Wind Turbines 2 and 3, which means that further UXO specific investigation would be required at these sites before installation begins. This could be a UXO geophysical survey with a diver or ROV inspection of any possible finds.

7.4 Summary

22 A risk assessment for encountering UXO was undertaken for the proposed EOWDC site (6 Alpha, 2010). This concluded that the main ordnance threat was due to the Black Dog Firing Range, extending beyond the range itself and specifically affecting Wind Turbines 2 and 3, where further investigation would be required. Outside this area, there is a low UXO risk to this project, which is considered to be the "background residual risk".

7.5 References

BACTEC International Limited (2007) Explosive Ordnance Threat Assessment of the Aberdeen Offshore Wind Farm, Report Number 9253TA April 2007

6 Alpha Associates (2010) Unexploded Ordnance (UXO) Risk Situation Report and Risk Assessment/Method Statement Review, Report Number P2219 August 2010

6 Alpha Associates (2010) Unexploded Ordnance (UXO) Threat & Risk Assessment with Mitigation Strategy. Project: Aberdeen Offshore Wind Farm, Report Number P2219 TRA September 2010.