

This issue: deep UXB detection, risk maps and more

Background: WWII bombing

While some German bombing occurred in the months prior, it was in September 1940 that a concerted aerial bombing campaign against Britain began, known as 'The Blitz'.

London was the initial primary target, with 57 consecutive nights of bombing recorded on the city.

From mid-November the Luftwaffe shifted its strategy to target provincial cities and major industrial centres across Britain. Heavy raids were conducted against Birmingham, Coventry, Southampton, Liverpool, Hull and Glasgow, with bombing densities decreasing in the surrounding urban and rural districts.



Heinkel He 111 over East London, 1940

In May 1941 the aerial campaign entered a period of relative inactivity, resumed only sporadically during the 'Baedeker Raids' of 1942, and the less effective 'Baby Blitz' of early 1944.

After a brief respite, attacks resumed with the 'vengeance weapons' campaign in June 1944. Flying Bombs (V1s) and Long-Range Rockets (V2s) were now used to inflict significant damage to property and infrastructure in the southeast; London being the primary target for these attacks.



Defuzing a 500lb UXB in Brondesbury Park, 2017

By the end of World War Two (WWII) it was estimated that the Luftwaffe had dropped approximately 75,000 tons of bombs on Britain, an estimated 11% of which failed to function as intended. Some of these unexploded bombs (UXBs) couldn't be dealt with due to either accessibility issues or uncertainty over their exact location, and were declared as officially abandoned.

Despite significant post-war clearance efforts, aerial-dropped ordnance continues to be encountered throughout Britain today, especially during construction. Notable recent examples include the discovery of a 250kg High Explosive (HE) bomb in Great Yarmouth in February 2023, and a 1,000kg HE bomb found in Exeter in February 2021.

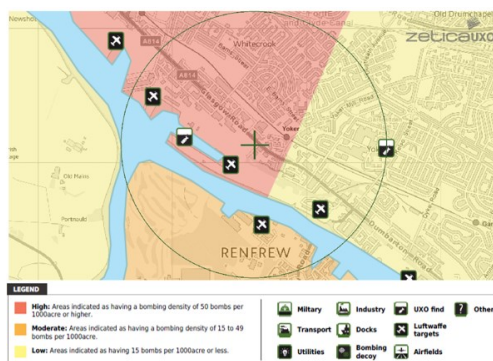
Discovery: UXB risk maps

Do you need help understanding the potential UXB hazard on your site? Our free bomb risk maps provide a quick and easy starting point.

Based on an extensive database of records, our risk maps provide a high level assessment of regional WWII bombing densities, and will confirm whether a more detailed risk assessment by a UXO specialist is required.

Typically, if the map shows that your site is in a moderate or a high risk area, a detailed UXO risk assessment is recommended. It should be noted that if the map shows that your site is in a low risk area, a detailed desk study may still be required. In this case it is recommended that a free pre-desk study assessment (PDSA) is undertaken to confirm whether any other military activity may have occurred on your site.

To download your free bomb risk map today, use the following link: <https://zeticauxo.com/downloads-and-resources/risk-maps/>



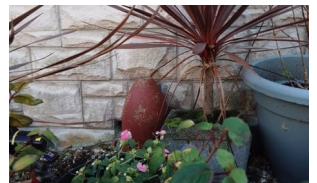
UXB risk map

Recent UXO finds

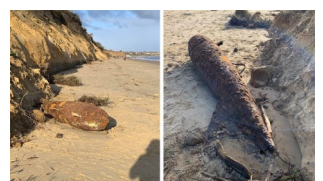
- 05/12/2023: An Explosive Ordnance Disposal (EOD) team was called to Scolt Head Island beach in Norfolk after the discovery of a 25lb artillery shell. A cordon was put in place before the shell was destroyed in a controlled explosion.



- 30/11/2023: A 64lb naval shell was discovered in a local garden in Milford Haven. The late 19th century shell was being used as a garden ornament upon discovery. It was taken to a disused quarry by an EOD team and safely detonated.



- 24/11/2023: A suspected WWII-era naval bomb was discovered at Lowestoft in Suffolk after the collapse of a cliff edge. An EOD team was called and the device was destroyed in a controlled explosion. Lowestoft was used a Royal Naval base during both world wars and UXO finds in the area are not uncommon.



Spotlight overleaf: UXO case study for a WWII bombing range



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Investigation: Deep UXB detection

Depending on the potential UXO hazard on your site, and the proposed construction works, a non-intrusive detection survey may not be appropriate. Where deep (>2.0m) UXB detection is necessary, such as for proposed borehole or pile locations, ZeticaUXO provides intrusive deep UXB detection techniques such as MagCone and MagDrill.

MagCone facilitates the pushing of a magnetometer into the ground at the proposed location of a pile, and Magdrill allows a probe to be lowered into a cased borehole. The Magnetometer is able to detect potential ferrous metal objects such as UXB.

The survey should be carried out to either the maximum bomb penetration depth or maximum drilling depth, whichever is shallower.

As a guide, the survey should be designed

based on a conservative detection range (radius from the probe) of 1.0m for a 50kg UXB until site conditions are confirmed. The actual detection radius should be measured and reported throughout the survey. Analysis of the data should be undertaken in the office by a suitably trained and qualified geophysics specialist to ensure that the location is properly cleared of UXB.

Assuming no objects comparable to the UXB detection range are identified, then the position can be considered clear of UXB. This should be confirmed in a clearance report.

If any ferrous anomalies are identified at a borehole or pile location, then it may need to be relocated or the anomaly investigated.

To find out more about possible risk mitigation techniques, visit our website: <https://zeticauxo.com/investigation/>

Case study: UXO support at a former WWII bombing range

Zetica was commissioned to undertake UXO risk mitigation ahead of habitat restoration works in Oxfordshire. The Client was planning to re-level an area of grassland using shallow excavations to create a wet grassland nature reserve and new bird habitat.

Between the 1920s and 1950s the Site was encompassed by a practice bombing range, which was used extensively for target practice by Royal Air Force (RAF) bombers during WWII.

A UXO desk-based review confirmed that the target area of the range was located in the field adjacent to the Site, and it was concluded that there was a high risk of UXO being present.

To mitigate the risk provided by potential UXB, Zetica undertook a site-wide non-intrusive magnetometer survey using a towed geophysical platform.



Example of a towed magnetometer survey platform

The main objective of the survey was to identify targets within the planned excavation depth that may be UXO related. Through target discrimination and further risk assessment, an agreed intrusive investigation strategy was devised to reduce the risk to the proposed works.

Zetica provided a team of Explosive Ordnance Clearance (EOC) engineers to carry out the intrusive investigation, during which a total of 131No. items of UXO were removed from the Site. 26No. pieces of ordnance related scrap were also recovered.



Live 250lb HE bomb

As anticipated, a range of WWII-era ordnance types were encountered, including 8.5lb, 10lb, 100lb and 500lb practice bombs. 1No. live 250lb HE bomb was also discovered, likely jettisoned by an operational bomber. Zetica managed the subsequent disposal process following agreed procedures for this project.

On the completion of the intrusive investigation, it was considered that the UXO risk to proposed works had been reduced to low. The Client was able to undertake their works safely and without further incident, whilst also minimising delays due to unexpected finds.

Do you need support managing the UXO risk on your site? Get in touch using our UXO email and we can help: UXO@zetica.com

Alternatively, if you have requirements to identify other buried hazards (such as mapping utilities or obstructions) we can provide these surveys. Find out more on our main website: <https://www.zetica.com/>



100lb practice bomb



25lb practice bomb