BOMBS AWAY UXO

TOOL BOX TALK FOR UNEXPLODED ORDNANCE (UXO) AWARENESS

SCOPE

This is a generic tool box talk (TBT) to increase awareness of unexploded ordnance, for any construction workers that may unexpectedly encounter it on site. It is important to note that this talk does not qualify or authorise anybody to dispose of ordnance – a little knowledge can be dangerous.

It is possible that a site specific UXO TBT may be required, if this is a specified within a risk assessment; this TBT may not be adequate for that purpose.

BACKGROUND

Unexploded ordnance is the general name for military weapons that have been used, but may still contain explosives. This can include bombs dropped by planes, artillery shells, grenades, mortar bombs and improvised weapons. Unexploded ordnance can be found at virtually any location in the United Kingdom and almost any type of construction project.

The UK, especially major cities and strategically important locations were subject to extensive aerial bombing during WW2. There was also aerial bombing in WW1 and some coastal towns were hit with artillery.

About 20% of the UK's land area has been used by the military, which includes training areas, airfields, defensive positions, explosive factories and decoys to divert enemy bombers.

Ordnance can be found at the sites of crashed aircraft and people unwittingly collect souvenirs which are still dangerous, sometimes burying them in a back garden when they realise the danger. UXO has even been found in backfill brought from a different location decades ago.

HAZARDS

A high explosive bomb from WW2 still has the potential to kill many people, if it were to detonate. Even small items of UXO could easily kill, maim or start fires. If any item which is suspected to be UXO is found, is must be treated with respect and considered dangerous.

POTENTIAL CONSTRUCTION SITES

It is possible that UXO could be found on any UK construction site, however it is most likely to be discovered in the ground. This means that those working in the ground (such as those completing site investigation, piling and foundation construction) are most at risk of encountering it. UXO has been discovered embedded in the fabric of buildings after being dropped from a plane and also hidden under floor boards and in the attic during refurbishment works.

EMERGENCY RESPONSE PLAN FOR DISCOVERY OF UXO

Your site will have a UXO Emergency Response Plan, which will be activated if suspected UXO is located. The key steps to remember are:

If you find something suspicious and think it may be UXO, **DO NOT TOUCH IT**. Switch off all machinery, plant and tools, leaving the area as quickly as possible, but minimising the risk of your equipment becoming a hazard and harming other people. Immediately inform your supervisor or site management about what you have seen, describing the size, shape and location of the object. If you are able to quickly take a photo with your phone, this could help identify the item.

If a UXO emergency is declared, all workers will be instructed to evacuate the site and move to a location at least 400 metres away from the suspect UXO, out of a direct line of sight. It is important that you use a safe route and do not move towards the suspect UXO, if possible.

When at the muster point, you must await instructions from your supervisors and management. You will not be allowed to return to the affected area of the site until the Police or a UXO specialist gives you permission.

If appropriate, give a presentation on the egress routes and the muster point(s) described in your site's UXO Emergency Response Plan at this point.

EXAMPLES OF UXO

Photographs and descriptions of UXO that can be found on construction sites follow. It must be noted that the intention of this information is to increase the awareness of UXO for site operatives, not train them to identify ordnance. Operatives should not put themselves in danger or additional risk trying to identify suspicious objects.

Photos:

1. SC250, 250kg German aerial dropped bomb & fuze
2. SC250, 250kg German aerial dropped bomb
3. SD70, 70kg German aerial dropped bomb
4. SC50, 50kg German aerial dropped bomb
5. SD10 & SD4, 10kg & 4kg German aerial dropped bomblets
6. SD2, 2kg German aerial dropped bomblet
7. SD1 FRZ, 1kg German aerial dropped bomblet
8. 10kg & 1kg German incendiary
9. British 3.7 inch anti-aircraft artillery shell
10. British Mk 5 anti-tank mine
11. British PIAT (Projector, Infantry, Anti-Tank) round
12. British mortar rounds
13. British grenades
14. Small arms ammunition
15. Detonation of 250kg German bomb
16. Non-explosive ordnance
17. WW2 warning poster for schools

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1. **SC250 - 250kg German aerial dropped bomb**

Body length	1.7 metres	65 inches
Diameter	370mm	14.5 inches

The two circles on the top of the body are fuzes. On this size bomb, it was common that one would be a delayed action fuze, that could initiate up to 72 hours after it landed. Many other fuzes were used including a sensitive version, solely designed to kill bomb disposal teams.

2. SC250, 250kg German aerial dropped bomb

Body length	1.7 metres	65 inches
Diameter	370mm	14.5 inches

Photo below shows a typical WW2 German fuze

Length:	100mm	4 inches
Diameter:	60mm	2.5 inches

3. SD70, German aerial dropped bomb

Body Length: 810 mm 32 inches
Body Diameter: 230 mm 9 inches

70kg bomb dropped on England during WW2, containing about 30kg of explosive. Landed in soft ground and was defused after WW2.

It is very unlikely that a bomb that has been dropped from an aircraft will be discovered with a tail fin. When Allied bombs have been abandoned (often at air fields used by the US Air Force), it is possible that they will be found intact.

In the event that a tail fin is discovered during ground operations, it is likely that a bomb has followed that route. Check that a UXO risk assessment has been completed and ask the risk assessment company for further advice.

Large German bombs with the "SD" prefix were designed to penetrate concrete and armour. They had thicker steel bodies and contained less explosive.

Bombs with the "SC" prefix were more common. They were general purpose bombs with a higher explosive content, designed to maximise the effect of the blast.

4. SC50, 50kg German aerial dropped bomb

Body length:	760mm	30 inches
Diameter:	200mm	8 inches

These were the most common high explosive bombs to be dropped on the UK during WW2.

5. SD10, 10kg German aerial dropped bomblet

Over-All Length:	22 inches	550mm
Body Length:	13 inches	320mm
Body Diameter:	3.5 inches	90mm

Cast steel fragmentation cluster bomb, containing 1kg of explosive. 17 carried in each container

6. SD2 – 2kg German aerial dropped bomblet

Overall length of cylindrical body: 90mm 3.5 inches

Diameter: 75mm 3 inches.

These are a very early example of cluster bombs and were distributed in containers that carried up to 108 bombs. The “stem and wings” were part of the arming system and are likely to have disintegrated over time. An average of 3nr SD2 are discovered in the UK each year. They were often fitted with delayed action or motion sensitive fuzes.

Upper photo shows a complete SD2, including arming rod and ‘wings’ after restoration.

Lower photo shows 2 cylindrical bodies

7. SD1 FRZ – 2kg German aerial dropped bomblet

Length:	130mm	6 inches
Diameter:	50mm	2 inches
Weight:	0.5kg	1.1lb
Explosive:	60g	2.1oz

Originally fabricated as mortar round for the French army, then converted and used as the first cluster bombs. 392 sub-munitions could be carried in an AB 500 container; 50 within an AB70 container (pictured later).

8. Incendiary bombs

1kg German incendiary bomblet

1kg body length (incl fin):	240mm	13.5 inches
1kg diameter:	50mm	2 inches

About 75% of the unexploded air dropped weapons that the Army deal within the UK are 1kg and 2kg incendiaries. This equates to about 43 in an average year. Vast numbers of small incendiary bomblets were dropped on the UK during WW2. These devices work using thermite and their explosive content is relatively low.

Brand 10 - 10kg German incendiary

Body length (incl fin):	1045 mm	41 inches
Body length (excl fin):	545 mm	21.5 inches
Diameter:	115 mm	4.5 inches

Phosphorus fire bomb, containing 4kg of petrol & phosphorus

9. British 3.7 inch anti-aircraft artillery shell

Length:	430mm	17 inches
Diameter:	95mm	3.7 inches
Weight:	13kg	28 lb
Max altitude:	14km	45,000 ft

AAA shells are the most common type of UXO found on construction sites. When discovered, they will typically be located within 2 metres of the surface. The 3.7 inch shell (pictured) was the largest AAA shell in common usage.

10. British Mark 5 anti-tank mine

Weight	5.7kg	12.5 lb
Height	100mm	4 inches
Diameter	200mm	8 inches
Weight	5.7kg	12.5 lb

Huge numbers of mines were laid on beaches and to strengthen the defences of key areas, such as bridges and road blocks. Whilst most were recovered after WW2, mines are sometimes discovered on construction sites.

11. British PIAT - Projector, Infantry, Anti Tank

Diameter:	83mm	3.3 inches
Length:	370mm	14.5 inches
Weight :	1.35 kg	3lb

These projectiles were fired from man-portable launchers, entering service in 1943 and were capable of destroying an armoured vehicle. A powerful spring launched these devices up to 320 metres. Faulty fuzes meant that only 75% of the projectiles exploded on impact.

These devices are more likely to be discovered on rural or “out of town” construction sites, that have been used as a firing range.

12. Mortar rounds

WW2 British 2 inch mortar rounds

Typical length:	225mm	9 inches
Diameter:	50mm	2 inches

Types of round include:

- High Explosive
- Phosphorus (smoke)
- Illuminating

Post WW2, 81 mm mortar illumination round

Length:	570 mm	22.5 inches
Diameter:	81 mm	3.2 inches

13. British grenades

Mills bomb

Diameter:	60mm	2.5 inches
Length:	100mm	4 inches
Weight:	0.8kg	1.7 lb
Explosive:	0.08 kg	0.2 lb

There are numerous types of these grenades and tens of millions have been produced. They were used from 1915 to the 1980s. Their danger area was considered to be 100 yards.

Number 69 grenade

Diameter:	60 mm	2.5 inches
Length (w/o cap):	114 mm	4.5 inches
Weight:	0.4 kg	0.8 lb
Explosive:	0.09 kg	0.2 lb

Introduced in 1942, it had a smaller destructive radius than the Mills bomb, so was intended for defensive operations. It was made of Bakelite, a type of plastic.

The low quantity of metal contained in these grenades makes them difficult to locate using metal detectors.

Sticky bombs (Number 74 grenade)

Weight: 1 kg

Length: 230 mm

Diameter: 100 mm

Explosive: 0.57 kg nitro glycerine

2.5 million sticky bombs were produced. They consisted of an explosive filled glass/ plastic sphere, which was coated in birdlime, protected by an outer case, until required for use.

The small quantity of metal contained in these grenades makes them very difficult to locate using metal detectors.

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Gammon bombs (no 82 grenade)

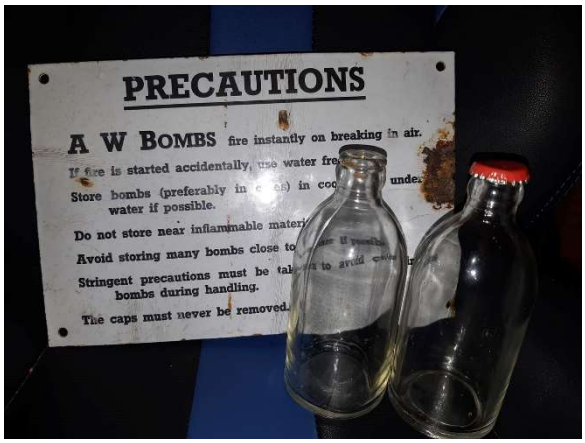
Weight empty 0.34 kg

Explosive 0.9 kg of plastic explosive

These were designed as a replacement for sticky bombs, which were considered dangerous and temperamental. The flexible bag could be filled with as much explosive or shrapnel, as was considered necessary, so could be used against vehicles and people. The fuze for the No 69 and Gammon Bomb were the same type.

The small quantity of metal contained in these grenades makes them very difficult to locate using metal detectors.

Self Igniting Phosphorus (SIP) grenades



Size: Half pint bottle

Also known as an A W bomb (named after the manufacturers), these improvised explosive devices are very unstable and will cause a significant fire if they are exposed to air (eg by breaking the glass). About 6 million were made and distributed to the Home Guard, around the UK. They are normally discovered in timber crates, often containing 24 grenades. When one box is discovered, others are sometimes present.

The small quantity of metal contained in these grenades makes them very difficult to locate using metal detectors, unless they are located in the original box, with the metal sign still attached.

Upper photo shows bottles shortly after discovery.

Lower photo shows two empty bottles with the warning sign that is found on the storage box

14. Small arms ammunition

British 50 calibre tracer round

Length:	140mm	5.5 inch
Projectile diameter:	12.7mm	0.5 inch
Cartridge diameter:	20mm	0.8 inch

Examples of small arms ammunition (incl belt of 7.62mm, 5.56mm rifle & 9mm pistol rounds)

15. Detonation of 250kg German bomb

Unlucky for some!

Don’t let it be you.

This was a 250kg device that was located on a construction site and destroyed in Kent.

16. Non-explosive ordnance.

Discovery of non-explosive ordnance may indicate that the site has a previously unidentified use as a military training area or target area, so a risk assessment should be completed. It can be difficult to know whether these items contain explosive and an expert will be required to confirm the status.

WW2 British armour piercing 2 pound projectile

These items are unlikely to be found at locations other than those with a former military use, probably firing ranges. If found with the brass casing intact, they will be considered as UXO and the Police informed.

WW2 German air dropped AB23 or AB70 munition dispenser

Length:	43 inches	1100 mm
Diameter:	8 inches	200 mm

Variations of these containers were used to carry sub-munitions such as the SD1 and SD2. The containers themselves contain a small quantity of explosive in the fuze, however their discovery could indicate that other explosive ordnance is present in the area. It is unlikely that these items will be at depth, but if found, Police should be informed and the risk assessment should be checked and revised, if necessary.

Plastic baton round (plastic bullet)

Length:	4 inches	100 mm
Diameter:	1.5 inches	38 mm

This projectile is used as a 'less than lethal' weapon to control crowds in a riot situation. They are only likely to be found on former military training areas and do does not contain explosive. If found with the cartridge intact, explosive is likely to be present and the police should be informed.