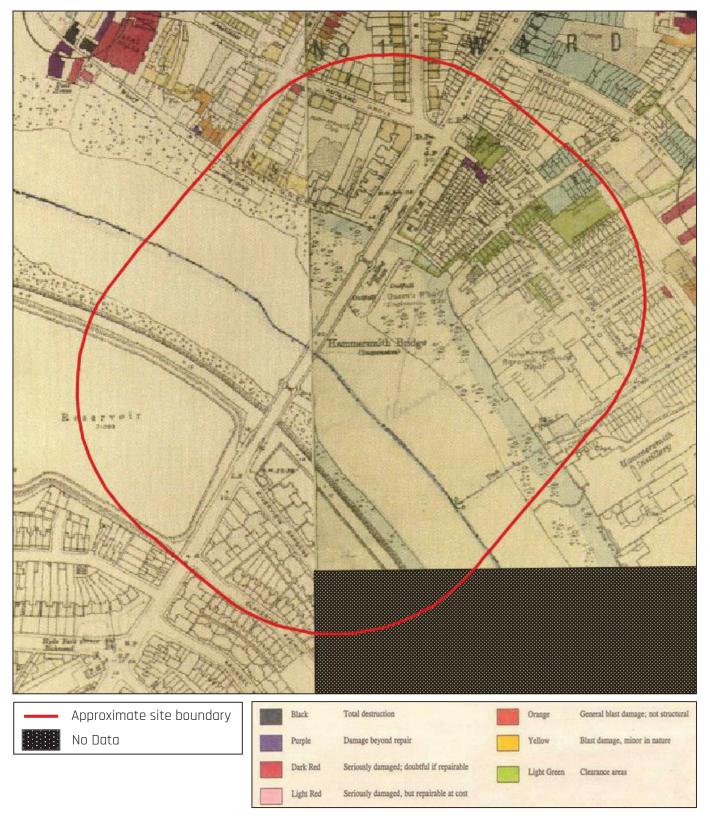
LCC Bomb Damage Map

Annex K Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA

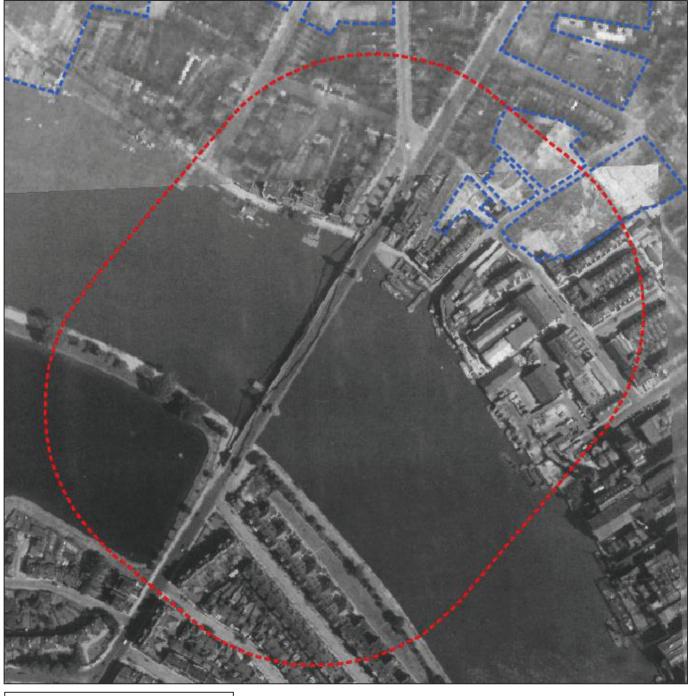
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London Metropolitan Archives

WWII-era RAF Aerial Photography 29/01/1947 + 18/05/1948 Annex L Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA

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Approximate site boundaryClearance

Recent UXO Incidents – Home Guard

Annex M

Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA



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23 July 2010 Last updated at 18:28

Covert British troops 'could have buried' WWII devices

World War II incendiary devices found on a building site in Gloucestershire could have been left by covert British troops, according to researchers.

More than 20 phosphorus bombs were unearthed in Birdlip after a digger hit one, causing it to burst into flames.

A former worker at the site said he saw a Home Guard officer burying objects there 65 years ago.

The Coleshill Auxiliary Research Team said auxiliary officers often used Home Guard uniforms as cover.



The bombs were put into vats of water to make them safe



by Aidan Barlow abarlow@thekmgroup.co.uk 💟 😭



Army bomb disposal team called to Blacksole Bridge in Herne Bay

08 July 2015

Comments | 3

It was like a scene from Dad's Army when Army bomb disposal experts found wartime explosives made by the Home Guard in makeshift bottles.

A team was called to the Blacksole Bridge in Herne Bay after the wartime bombs were found.



 Image: Second system
 Image: Second system

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EAST ANGLIAN DAILLY TIMES

WATCH: Bomb squad detonate 24 Second World War grenades found buried in Suffolk field

Adam Howlett adam.howlett@archant.co.uk @EADTadam PUBLISHED: 12:08 28 May 2019 | UPDATED: 13:39 28 May 2019



SIP Grenades were discovered and detonated in Sibton by British Army Bomb Disposal Experts, Suffolk Police and Suffolk Fire & Rescue Picture: SUFFOLK FIRE & RESCUE SERVICE

The bomb squad safely detonated dozens of incendiary grenades found buried in a field in Sibton near Saxmundham on Bank Holiday Monday.

VIDEO: Explosion after 80 grenades detonated in Eastbourne



Marked 'AW Bomb 1940' the grenades were thought to have been phosphorus incendiary grenades created as improvised anti-tank weapons when Britain was facing invasion following the army's evacuation from Dunkirk in 1940.

He said, "I remember the grenades being buried. It was part of the Home Guard stash, it was put there in case we were invaded. It had to be in 1943. There were a lot of them [stashes], they were all over the place."

SAFELANE Lan GLOBAL

Land Service Ammunition – Home Guard

Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA

Crown stoppe

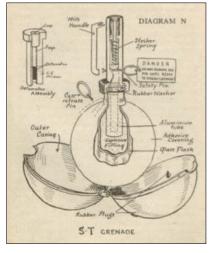
Self Igniting Phosphorous (SIP) Grenades

The grenade comprised a glass bottle with a total volume of approximately one pint. It was filled with White Phosphorus, benzene, a piece of rubber and water. Over time the rubber dissolved to create a sticky fluid which would self ignite when the bottle broke. Fired by hand or Northover Projector. Sometimes called the "A & W" (Albright & Wilson) grenade.



No 74 Grenade (Sticky Bomb)

Designed as an anti-tank grenade and used by the Home Guard. The grenade consisted of a glass ball on the end of a Bakelite (plastic) handle. Inside the glass ball was an explosive filling whilst on the outside was a very sticky adhesive covering. Until used, this adhesive covering was encased in a metal outer casing.



Flame Fougasse Bomb

A Flame Fougasse was a weapon in which the projectile was a flammable liquid, typically a mixture of petrol and oil. It was usually constructed from a 40-gallon drum dug into the roadside and camouflaged. Ammonal provided the propellant charge which, when triggered, caused the weapon to shoot a flame 3m (10ft) wide and 27m (30 yards) long. Initially a mixture of 40% petrol and 60% gas oil was used, this was later replaced by an adhesive gel of tar, lime and petrol known as 5B.





20

30



SafeLane Global and various historical sources

Annex N-1

Land Service Ammunition

– Mortars

Annex N-2

Hammersmith Bridge Refurbishment

Pell Frischmann

8307 RA

Typical 2 inch High Explosive Mortar

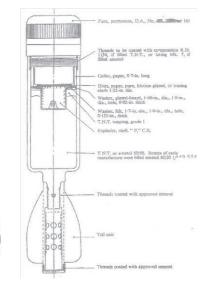
SAFELANE

Bomb Weight: Type: Dimensions: Filling: Maximum Range: Remarks:

GLOBAL

1.02kg (2.25lb) High Explosive 51 x 290mm (2in x 11.4in) 200g RDX/TNT 457m (500yds) Fitted with an impact fu charge (exploder) and, in

Fitted with an impact fuze which detonates the fuze booster charge (exploder) and, in turn, the high explosive charge. The main charge shatters the mortar bomb body, producing near optimum fragmentation and blast effect at the target.





Type:
Dimensions:
Filling:
Maximum Range:
Remarks:

Smoke c490 x 76mm (19.3in x 3in) Typically white phosphorous

2515m (2,750yds)

On impact, the fuze functions and initiates the bursting charge. The bursting charge ruptures the mortar bomb body and disperses the white phosphorous filler. The white phosphorous produces smoke upon exposure to the air.

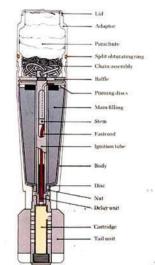




Typical 2 inch Illuminating Mortar

Type:	Illum.
Dimensions:	51 x 290mm
Filling:	Various
Remarks:	The expulsion charge ignites and ejects the candle assembly. A spring ejects the parachute from the tail cone. The parachute opens, slowing the descent of the burning candle which illuminates the target.





Land Service Ammunition

– Grenades

Annex N-3

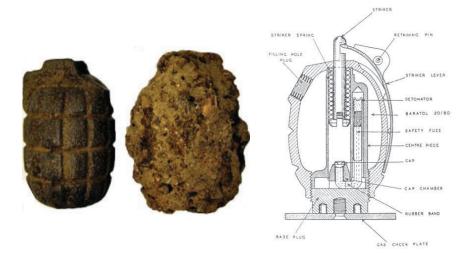
Hammersmith Bridge Refurbishment

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No. 36 'Mills' Grenade

Weight:	0.7kg filled (1lb 6oz)
Туре:	Hand or discharger, fragmentation
Dimensions:	95 x 61mm (3.7 x 2.4in)
Filling:	Alumatol, Amatol 2 or TNT
Remarks:	4 second hand- throwing fuse with approximate 30m range. First introduced May 1918.



Grenade, .303 inch rifle, No. 36M, Mark I.

No. 69 Grenade

- Weight: Type: Date Introduced: Remarks:
- 0.38kg filled (0.8lb) Percussion/Blast December 1940 Black Bakelite body. Blast rather than fragmentation type. After unscrewing the safety cap, a tape is held when throwing the grenade releasing the safety bolt in the throwing motion. Detection is problematic due to its very low metal content.

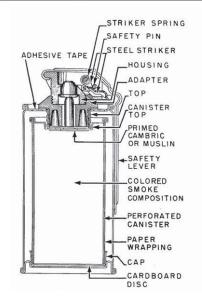




Typical Smoke Grenade

Dimensions:	Approx. 65 x 115mm (2.5 x 4.5in)
Type:	Smoke
Date Introduced:	Current MoD issue
Remarks: target	Smoke grenades are used as ground-to-ground or ground- to-air signalling devices, or landing zone marking devices, and screening devices for unit movement.





Annex O

Hammersmith Bridge Refurbishment Pell Frischmann

8307 RA

20mm Hispano HEI Ammunition

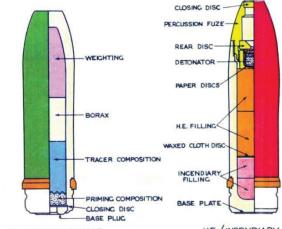
GLOBAL

SAFELANE

Type:	Live canon round
Markings:	Upper half of projectile painted 'buff' colour, lower half is red.
Cartridge Weight:	256 grams
Dimensions:	Total cartridge / projectile length - 182mm
Fuzed:	Contact fuze – No.253, No.254 or No.917
Filling:	108 grains of contact explosive + 68 grains of SR.379 incendiary composition.
Threat:	Explosives within unspent cartridge as well as the projectile.
Deployment:	Royal Navy, RAF and British Army Light Anti- Aircraft guns. Also RAF aircraft canons.
Remarks:	Cartridges are belted or supplied lose in cartons.

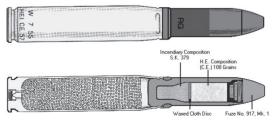
Small Arms

Ammunition



PROJECTILE TRACER

HE./INCENDIARY





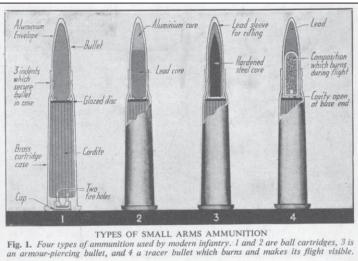
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BRITIS	н	
NATURE OF SHELL	H.E.FILLING	COLOUR
H.E. TRACER	TNT.	
H.E.	TNT.	
PROJ. PRACTICE		
PROJ. TRACER		
H.E. INCENDIARY	T.N.T.	
H.E.INCENDIARY TRACER	T.N.T.	

.303" Ammunition

Type:	Rifle / machine gun round
Markings:	Regular round - none. Tracer round – red Primer
Bullet Weight:	150 - 180 grams
Dimensions:	Total cartridge /projectile length - 78mm
Filling:	Regular round – none. Tracer round – small incendiary fill
Threat:	Explosive cordite within unspent cartridge
Deployment:	Royal Navy, RAF and British Army Light Anti-Aircraft guns, machine guns and rifles. Standard British and Commonwealth military cartridge from 1889 until the 1950s.
Remarks:	Cartridges are belted or supplied lose in cartons.







Anti-Aircraft Artillery

Annex P

Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA

3.7 inch Anti-Aircraft Projectile

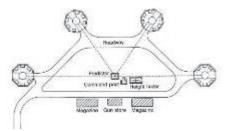
- Weight: Dimensions: Carriage: Rate of Fire: Ceiling: Muzzle Velocity: Remarks:
- 12.7kg (28lb) 94 x 360mm (3.7 x 14.7in) Mobile and Static Versions 10-20 rounds per minute 9-18,000m (29-59,000ft) 792m/s (2,598ft/s) 4.5 inch projectiles were also commonly utilised



Hyde Park 1939 3.7 Inch QF gun on mobile mounting.



This AA shell was uncovered on a construction site in North London in February 2009.



Layout plan for a typical HAA battery site.



3.7 inch AA Projectile, Minus Fuze.

Rockets / Un-rotating Projectiles

- Weight: Warhead:: Dimensions: Carriage: Ceiling: Maximum Velocity:
- Overali: 24.5kg (54lb) 1.94kg (4.28lb) 1930mm x 82.6mm (76 x 3.25in) Mobile – transported on trailers 6770m (22,200ft) 457mps (1,500 fps)



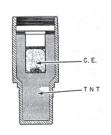
Rocket Battery in action.

40mm Bofors Gun Projectile

Weight: Dimensions: Rate of Fire: Ceiling: Muzzle Velocity: Remarks: 0.86kg (1.96lb) 40mm x 310mm (1.6in x 12.2in) 120 rounds per minute 23,000ft (7000m) 2,890 ft/s (881m/s) Mobile batteries – normally few records of where these guns were located



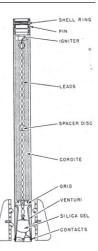
Unexploded 40mm Bofors projectile



MK II HE Shell (3.5kg).



Home Guard soldiers load an anti-aircraft rocket at a 'Z' Battery.



2" U.P AA Rocket.



40mm Bofors gun and crew at Stanmore in Middlesex, 28 June 1940.



Fatal Incidents at Construction sites

Annex Q-1 Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA



or survivors after a Sec-ond World War bomb reploded at a building site in Berlin, killing three ite and internet. 15

t others. fire brigade spokesman he feared the final h toll could be higher. worker was still miss-

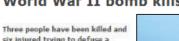
elieved to be trapped r a machine. "We've

Blown up by history AL The bl t, set off by drill

ñ Fr of a ast Berli es, trapp

dense afternoon traffic. One eyewitness said: "There was a bang, then silence, and then it started raining stoness and dir." Doens of cars within a 250-metre radius were wrecked and the top two foces of a nearby spar-ment block caved in. Radio reports claimed that the total number of injured stood at 14. ck was te of

being bui the explo m which se shoppers scramhling for shelter and paralysed World War II bomb kills three in Germany



six injured trying to defuse a World War II bomb in central Germany.

Workers building a sports stadium had earlier unearthed the bomb in the town of Goettingen.

It was not immediately clear why the bomb, reportedly weighing 500kg (1.100lb), had detonated.



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A World War Two bomb has exploded at a construction site near a west German town, killing a man and injuring eight others, police say. The explosion occurred after a digger accidentally struck the device during excavation work in Euskirchen in the state of North Rhine-Westphalia.

Top Left: WWII bomb killed 3 and injured 8 in Berlin – 1994.

Middle Left: WWII bomb killed 3 in Goettingen, Germany – 2010.

Bottom Left: Excavator operator killed by WWII bomb in Euskirchen, Germany - 2014.

Top Right: A highway construction worker in Germany accidentally struck a WWII bomb, killing himself and wrecking several passing cars – 2006.

Middle Right (Top) : Destroyed piling rig and dump truck after detonation of WWII UXB in Austria – 2006.

Middle Right (Bottom): WWII bomb injures 17 at construction site in Hattingen, Germany – 2008.

Bottom Right: A buried WWII-era bomb exploded during construction works in Bandar Malaysia, Kuala Lumpur – 2017.









I dead, 2 critical after explosion at Malaysia MRT construction site caused by WWII bomb

Various News Sources

Effects of UXO Finds on UK Construction Sites

Annex Q-2 Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA

London City Airport shut: Flights cancelled after Second World War bomb found in River Thames dock

ondon City Airport has been closed after the discovery of an unexploded Second World War bomb, affecting tens of thousands of passengers.

All flights into and out of the airport, in east London, will be stopped on Monday after the device was found nearby in the River Thames on Sunday.

The closure led to the cancellation of more than 100 departures and was affecting up to 16,000 passengers, according to a spokeswoman. A 700ft (214-metre) exclusion zone was put in place on Sunday evening to ensure the device could be dealt with safely.

People living inside the zone were evacuated from their homes overnight, while police said a number of road cordons have been put in place in Newham.

Unexploded WW2 bomb found in Birmingham

An unexploded Second World War bomb was found in Birmingham this afternoon, causing a construction site to be evacuated.

Aston Expressway bomb: Controlled explosion carried out on Second World War shell

A Second World War bomb found near the Aston Expressway has been safely detonated, bringing 30 hours of drama to an end. The explosion meant a gradual return to normality for the 200 residents who had been evacuated from the 1,600ft (500 metre) cordon put in place on the advice of explosives experts.

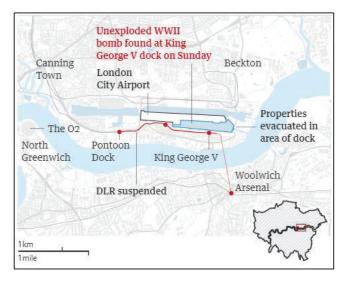
However, although the M6 was reopened after the blast, the key Aston Expressway stayed shut until 6pm - extending traffic disruption which had added 90 minutes onto many people's journeys.

The A38(M) and slip roads off Spaghetti Junction had all been shut since the large German bomb was found on Monday morning, while nearby rail services were also disrupted.

Bath WW2 bomb scare: Hundreds of homes evacuated

Up to 1,000 homes have been evacuated and a 300m exclusion zone is in place following the find in Lansdown Road.

According to reports, a 500lb (228kg) bomb was found just a metre beneath a playground at the former Royal High Junior School.









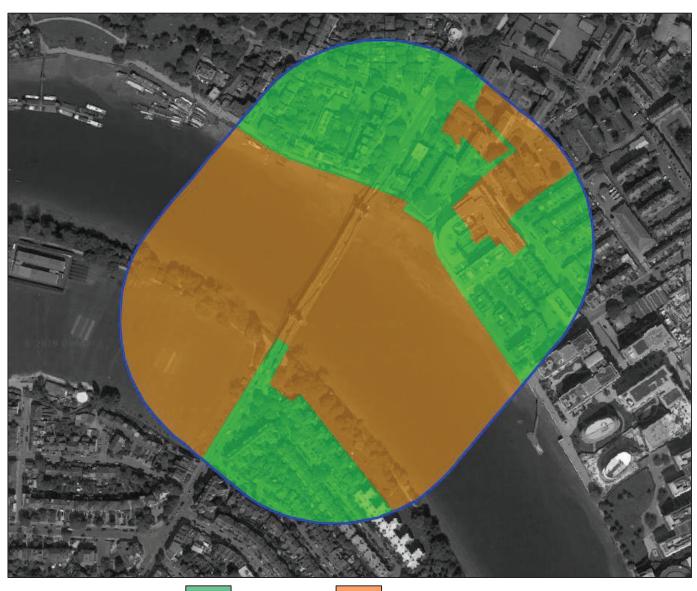
Various News Sources

SAFELANE Risk Map

Annex R Hammersmith Bridge Refurbishment Pell Frischmann 8307 RA

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Please Note: image for reference only



Low Risk Zone

Medium Risk Zone

Both Risk Zones:

- Site Specific Explosive Ordnance Safety and Awareness Briefings to all Personnel conducting Intrusive Works.
- The Provision of Unexploded Ordnance Site Safety Instructions.

Medium Risk Zones:

- Explosive Ordnance Disposal (EOD) Engineer presence on site to support shallow and basement intrusive works.
- Intrusive Magnetometer Survey of all pile locations down to the maximum bomb penetration depth
- **Marine:** Non-Intrusive Magnetometer and Side Scan UXO Survey + Seismic Investigation: Further Non-Intrusive Survey over exact locations to identify and mitigate risk