

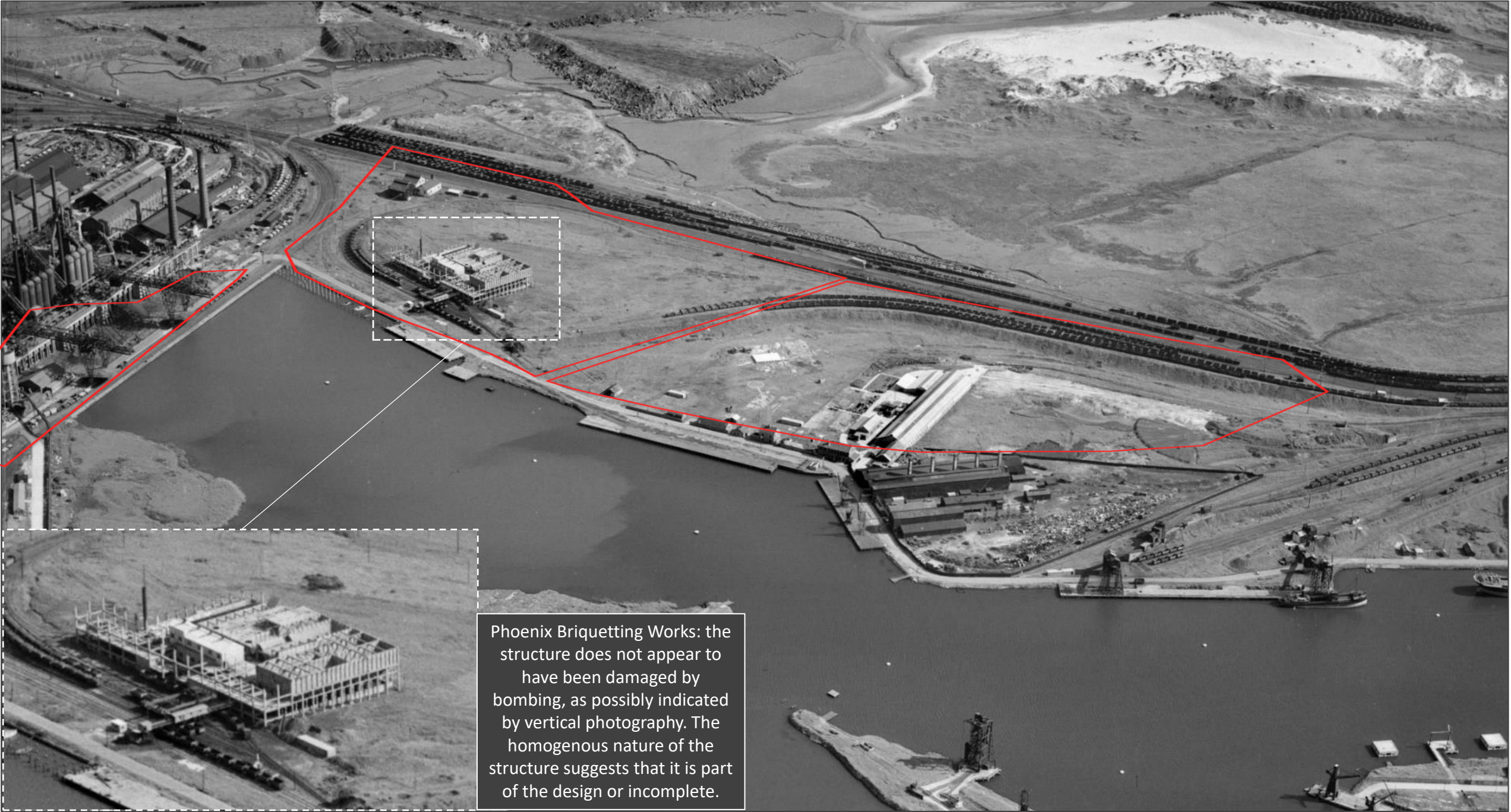


Project	Project Dragon, Port Talbot	
Client:	TEC Ltd	
Report Ref:	DRA-23-1532	
 Approx. Site Boundary	Info Source:	Historic England



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Partial Site Boundary

Report Ref: **DRA-23-1532**

Project **Project Dragon, Port Talbot**

Info Source: Britain from Above

Client: **TEC Ltd**



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 Hafenanlagen

 Gaswerk

 Umspannwerk

 Eisengießerei

 Steinkohlenbrikettfabrik

 Kupferwerke

 Wasserwerk, Hochbehälter

 Eisenbahnbrücke

 Straßenbrücke

 Fußgängerbrücke, Steg

 Schleuse

XXIII. N.E. ✓



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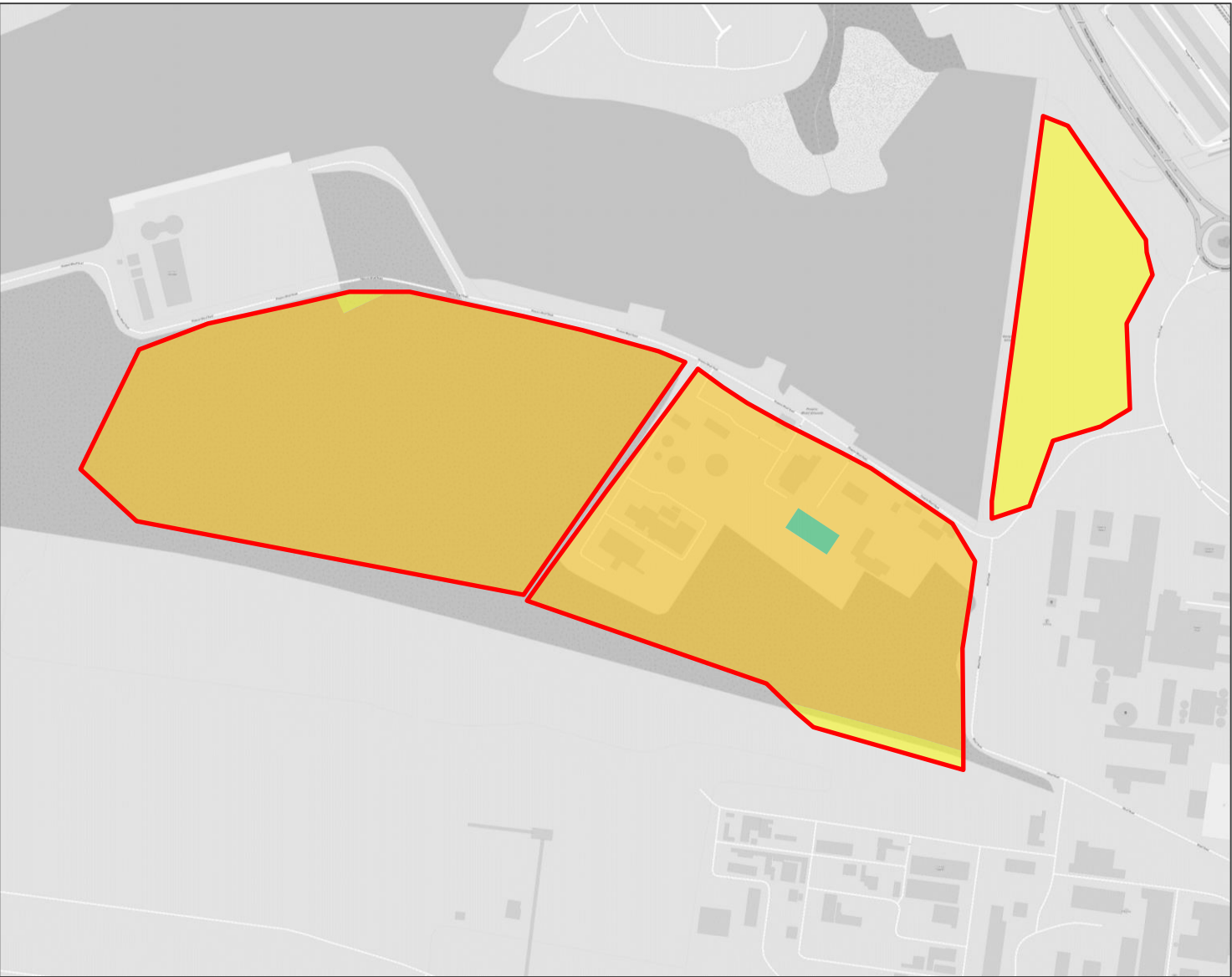
Low Risk from German UXBs & HAA Shells
Low-Moderate Risk from German UXBs & HAA Shells
Moderate Risk from German UXBs & HAA Shells

	Project	Project Dragon, Port Talbot	
	Client:	TEC Ltd	
	Report Ref:	DRA-23-1532	
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Appendices: 1 - 5



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Recent German UXB Finds in the UK + Historical Analysis

- **23rd May 2019** - An SC250 (standard 250kg HE bomb) was found during shallow excavations at a building site in Kingston upon Thames, London. *Historical Analysis: The UXB landed in a small residential back garden belonging to an undamaged terraced house. It came to rest approximately 3 to 4m bgl.*
- **15th May 2017** - An SC250 (standard 250kg HE bomb) was found during shallow excavations at a building site in Aston, Birmingham. *Historical Analysis: The UXB landed in a small back garden belonging to a terraced house, part of a row. It J-Curved under a neighbouring garden and came to rest at just 1.4m bgl. NB: These houses had not sustained bomb damage.*
- **2nd March 2017** - A 250kg HE bomb was found during deep excavations at a building site in Brondesbury Park, London. *Historical Analysis: UXB landed in a large residential back garden. A single storey building was built on top of the UXB post-WWII.*
- **19th January 2017** - An SD50 (semi-armour piercing 50kg HE bomb) was dredged from the Thames during barge dredging works near Westminster Bridge, London.
- **12th May 2016** - A 500kg HE bomb was found buried just 1m below the playground of the former Royal High Junior School in Bath. *Historical Analysis: The UXB landed in a plot of neglected, unmaintained vegetation in between the school gym and main school building.*
- **23rd September 2015** - A 1,000kg HE bomb was encountered by a mechanical excavator on a building site in Paradise Street, Coventry. *Historical Analysis: the UXB landed in a large residential back garden occupied by dense vegetation. A two storey building was built on top of the UXB post-WWII.*
- **10th August 2015** - A 250kg HE bomb was found immediately beneath a basement floor during refurbishment works in Temple Street, Bethnal Green (London). *Historical Analysis: The UXB struck a house that had been damaged beyond repair during a previous air raid. The existing house was then built on top of UXB post-WWII.*
- **21st May 2015** - An SC50 (general purpose 50kg HE bomb) was found during deep excavations at a construction site in Wembley, London. *Historical Analysis: UXB landed in a large residential back garden.*
- **23rd March 2015** - A 250kg HE bomb was found during deep excavations at a building site in Grange Walk, Bermondsey (London). *Historical Analysis: inconclusive - reported UXB position is likely inaccurate.*

NB: Domestic UXO finds in the UK are too numerous to list. Between 2006 and 2009, over 15,000 items of British / Allied UXO (excluding small arms ammunition) were found on UK construction sites (CIRIA).

Initiation of WWII Allied Bombs

- **6th January 2014** - Mechanical excavator stuck a WWII bomb in Euskirchen (Germany) causing it to explode, killing the operator and injuring 13 more, two critically. The explosion was so large it damaged buildings 400m away.
- **1st March 2013** - During piling at a construction site in Ludwigshafen (Germany) a small buried WWII bomb exploded, injuring one worker.
- **2nd June 2010** - A British 500kg bomb detonated whilst being defused, killing three EOD engineers in Goettingen, Germany. The bomb was found as builders dug the foundations for a new sports hall. Several houses had their fronts blown off by the blast.
- **19th September 2008** - Seventeen people were injured and buildings were damaged when an excavator apparently drove over and set off a 250kg American bomb at a construction site in Hattingen, Germany.
- **23rd October 2006** - A construction worker breaking up tarmac at the side of a highway near the south-western German town of Aschaffenburg was killed when his machine struck and detonated a WWII bomb. In addition, the blast injured several motorists who were driving past.
- **2006** - A piling rig and dump truck were destroyed when a piling rig struck an Allied bomb on a construction site in Austria.
- **2003** - In the Austrian city of Salzburg, two people were killed while attempting to defuse a 250kg Allied bomb.
- **1994** - At a central Berlin construction site a piling rig struck a large WWII Allied bomb. 3 were killed and 14 more were injured. Dozens of cars in a 250m radius were wrecked, the top 10 floors of neighbouring office building collapsed and human remains were found 100m away.
- **1990** - In Wetzlar (Germany) two EOD engineers were blown up as they removed the detonator of an allied WWII UXB.

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	Client:		TEC Ltd		
	Report Ref:		DRA-23-1532		
		Info Source:	Various		

SC 50

Bomb Weight:

Explosive Weight:

Filling:

Charge/Weight Ratio:

Fuse Type:

Body Dimensions:

Appearance:

Variants:

40-54kg (110-119lb)

25kg (55lb)

TNT, Amatol or Trialen

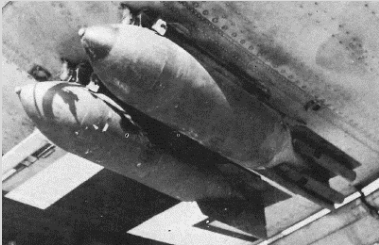
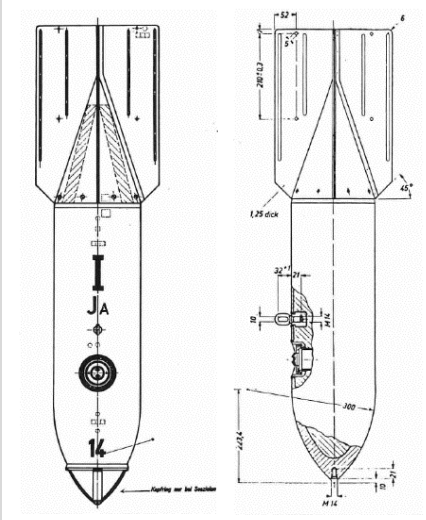
46%

Electrical impact fuse or mechanical delayed action fuse

1,100mm length x 200mm diameter

Bomb body and tail painted grey/green with a yellow stripe on the tail unit. Steel construction.

8 x variants. Additional fittings: Kopfring nose for limited penetration and Stabbo nose for dive-bombing.



SC 250

Bomb Weight:

Explosive Weight:

Filling:

Charge/Weight Ratio:

Fuse Type:

Body Dimensions:

Appearance:

Variants:

245-256kg (540-564lb)

125-130kg (276-287lb)

TNT, Amatol and Trialen mix

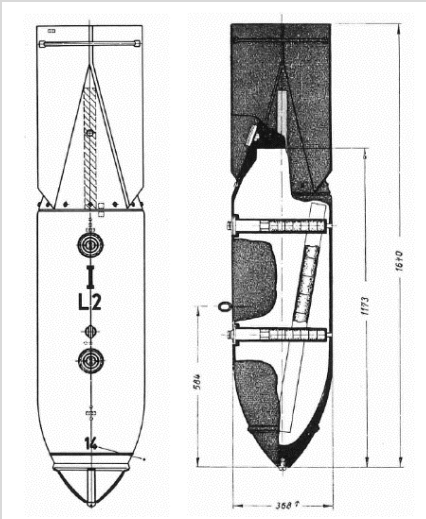
44%

1 or 2 electrical impact fuse(s) or mechanical delayed action fuse(s)

1,173mm length x 368mm diameter

Bomb body and tail painted grey/green with a yellow stripe on the tail unit. Steel construction.

8 x variants. Kopfring nose for limited penetration. Stabbo nose for dive-bombing.



SC 500

Bomb Weight:

Explosive Weight:

Filling:

Charge/Weight Ratio:

Fuse Type:

Body Dimensions:

Appearance:

Variants:

480-520kg (1,058-1,146lb)

220kg (485lb)

TNT, Amatol and Trialen mix

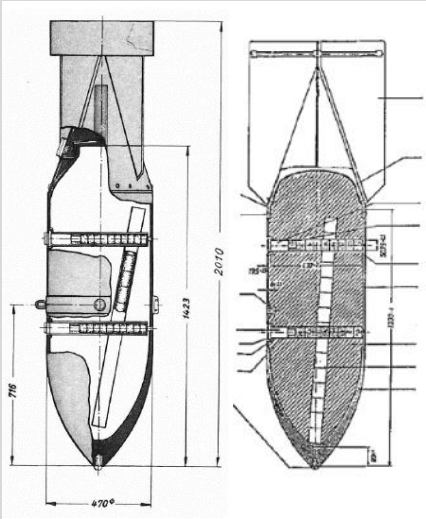
44%

2 electrical impact fuses or mechanical delayed action fuses

1,423mm length x 470mm diameter

Bomb body and tail painted grey/green or buff with a yellow stripe on the tail unit. Steel construction.

3 x variants. Kopfring nose for limited penetration.



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Info Source:	W, Ramsey.1988 / various news sources

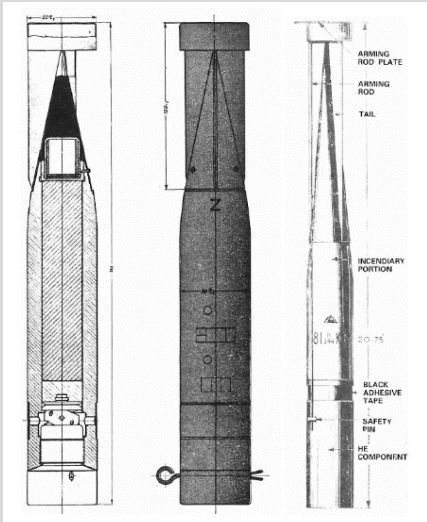
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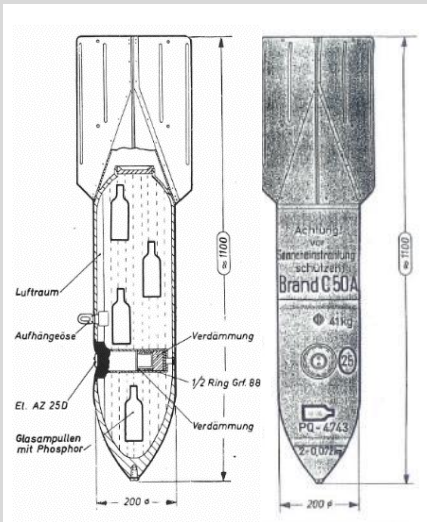
B-1E Sub-Munition

Bomb Weight: 1-1.3kg (2.2-2.87lb)
Incendiary Weight: 680g (1.4lb)
Filling: Thermite
Fuse Type: Simple impact fuse
Body Dimensions: 247mm length x 50mm diameter
Appearance: Grey body and dark green painted tail unit. Magnesium alloy case.
Operation: Small percussion charge ignites Thermite (>1,000°C burn).
Variants: Most common variant: B 2EZ (2kg) included a small HE charge
Remarks: Drop containers varied in size. The smallest cluster bomb held 36 x B-1Es and the largest 620 x B-1Es.



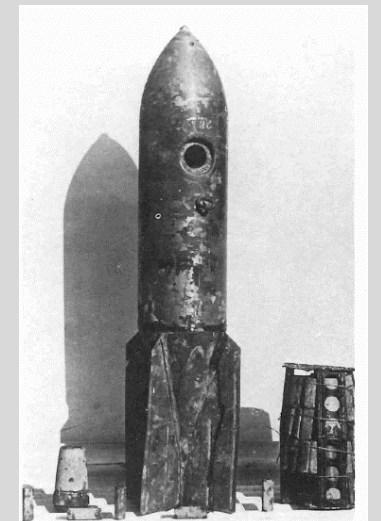
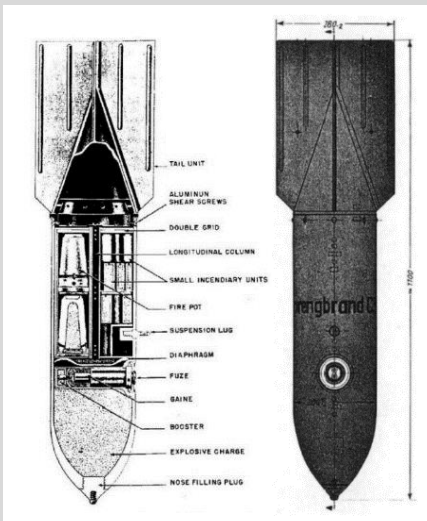
Brand C50

Bomb Weight: 41kg (90.4lb)
Incendiary Weight: 13kg (30lb)
Filling: Main fill (86% Benzine, 10% Rubber) plus 4% Phosphorus in glass bottles
Fuse Type: 1 x electrical impact fuse
Bomb Dimensions: 762mm length x 203mm diameter
Appearance: bomb body and tail painted grey or green with the rear of the bomb painted red and a red band around the centre of the body.
Variants: C 50 B: 77% White Phos fill
C 250 A: 87.7% Petroleum, 11.7% Polystyrene, 0.5% White Phos (185kg version)



Spreng-Brand C50 - Fire Pot

Bomb Weight: 34kg (75lb)
Explosive Weight: 9kg (20lb)
Filling: TNT burster charge, 6 x Thermite containers (fire pots) and 67 x small triangular incendiary elements.
Fuse Type: 1 x electrical impact fuses or aerial burst fuse
Bomb Dimensions: 711mm length x 203mm diameter
Appearance: Bomb body and tail painted grey/green or pale blue with red base plug and red or green incendiary markings. Steel construction.
Operation: A charge blows off the base plate, firing a plume of incendiary mixture 100 yds. Approx 1 second later the HE charge detonates.



Project

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Info Source:

W, Ramsey.1988 / various news sources

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HAA Battery - 3.7" QF Shell

Shell Weight: 12.7kg

Shell Dimensions: 94mm x 438mm

Fill Weight: 1.1kg

Fill Type: TNT

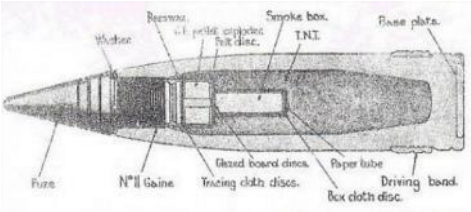
Fuse Type: Mechanical Time Delay fuse

Appearance: Grey body, copper driving bands, brass neck

Rate of Fire: 10 - 20 rpm

Ceiling: 9,000 - 18,000m

Variants: HE or shrapnel shells.
Note, the 4.5" gun was also used in an HAA role throughout the UK.





LAA Battery - 40mm Bofors Shell

Shell Weight: 0.84kg

Shell Dimensions: 40mm x 180mm

Fill Weight: 70g

Fill Type: TNT

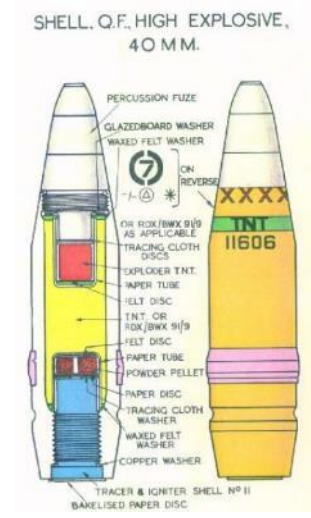
Fuse Type: Impact fuse

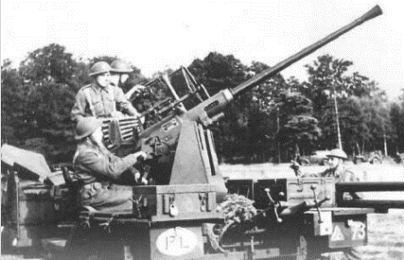
Appearance: Grey body, copper driving bands, brass neck

Rate of Fire: 120 rpm

Ceiling: 7,000m

Variants: HE or AP shells. Both with rear tracer compartment





Z Battery - 3" U.P Rocket

Rocket Weight: 24.5kg

Warhead Weight: 1.94kg

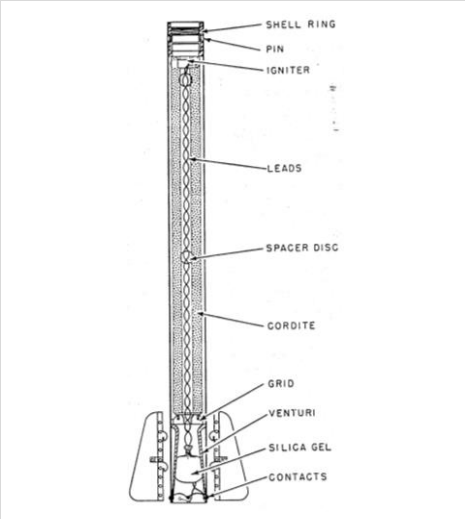
Filling: TNT warhead. Black Powder solid fuel rocket motor.

Fuse Type: Mechanical Time Delay fuse

Rocket Dimensions: 1,930mm x 76mm

Ceiling: 6,770m

Operation: Fired from single, tandem and (later) 36 x rail launchers (Z Batteries). Limited use throughout the UK.





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Info Source:	W, Ramsey.1988 / various news sources

AA	Anti-Aircraft (defences)
AFS	Auxiliary Fire Service
AP	Anti-Personnel
ARP	Air Raid Precautions
ASW	Anti-Submarine Warfare
BDU	Bomb Disposal Unit (historic term for EOD)
Bgl	Below Ground Level
EOC	Explosive Ordnance Clearance
EOD	Explosive Ordnance Disposal
FP	Fire Pot (German bomb)
GI	Ground Investigation
HAA	Heavy Anti-Air (gun battery)
Ha	Hectare (10,000m2)
HE	High Explosive
IB	Incendiary Bomb
Kg	Kilogram
LAA	Light Anti Air (gun battery)
LCC	London County Council
LRRB	Long Range Rocket Bomb (V2)
LSA	Land Service Ammunition
Luftwaffe	German Air Force
OB	Oil Bomb (German bomb)
PM	Parachute Mine (German bomb)
RAF	Royal Air Force
RFC	Royal Flying Corps
RN	Royal Navy (British)
RNAS	Royal Naval Air Service
ROF	Royal Ordnance Factory
SAA	Small Arms Ammunition
SD2	2kg AP bomb (German bomb)
SI	Site Investigation
U/C	Unclassified (German) bomb
UP	Unrotating Projectile (British 3” AA rocket)
USAAF	United States Army Air Force
UX	Unexploded
UXB	Unexploded Bomb
UXO	Unexploded Ordnance
V1	German Flying (pilotless) bomb - “Doodlebug”
V2	German LRRB - “Big Ben”
WAAF	Women’s Auxiliary Air Force
WWI	World War One
WWII	World War Two

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