



Management of ERW Residual Contamination in Europe

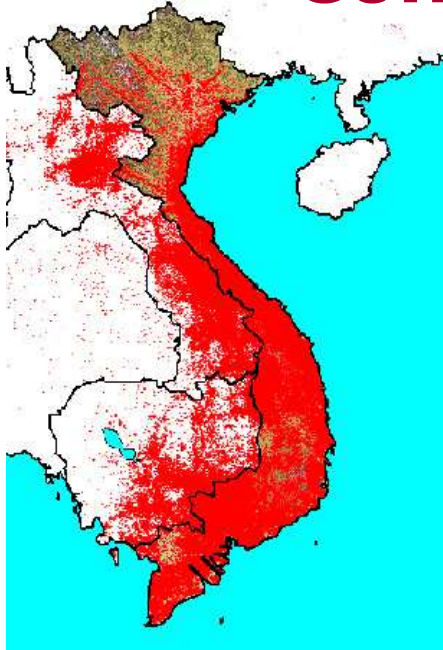
Experience, Policy and Practice

Relevance in the context of developing nations

Guy Rhodes,
Head, Operations Division



Contamination in SE Asia



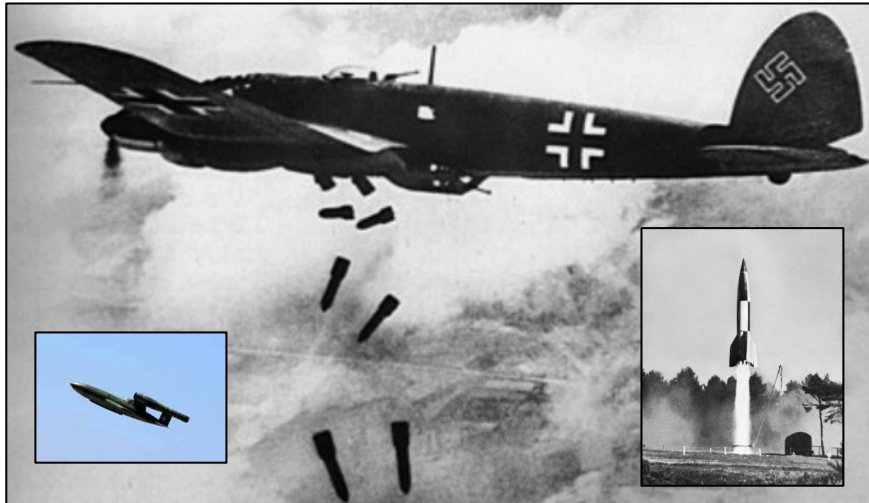
- Extensive – difficult to define and map
- 3D nature of contamination
- Impact of ERW is land-use dependant
- Need to differentiate between surface/ shallow and deep bomb contamination
- Consider European context ..





Contamination in the UK and Germany

The bombardment



Heinkel He-111 over the UK

The UK and Germany were both subject to sustained, intense bombing

A variety of weapons were used incl. cluster bombs, 'blockbusters', rockets, cruise & ballistic missiles

Lancaster releasing blockbuster bomb with incendiaries





The aftermath in the UK

**Balham Underground Station,
SW London, October 1941**



**40,000
civilians died
during the
Blitz – 9
month period
in London**

**30,000 killed
or injured
during the V1
and V2
strikes**



The aftermath in the UK

Around 1million buildings were destroyed in London and the UK during the Blitz;

Another 1million were destroyed during the V1 and V2 strikes

Bomb damage assessment maps



Poplar district, East London in June 1941



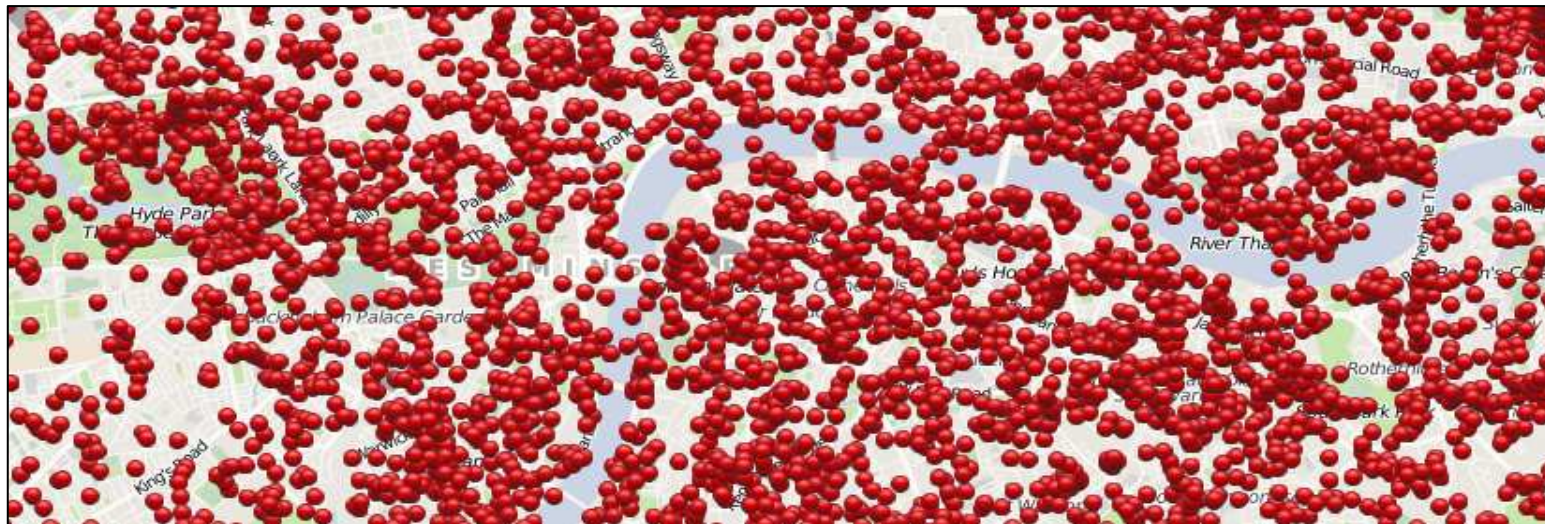
Churchill inspecting bomb damage



Unearthed bombs



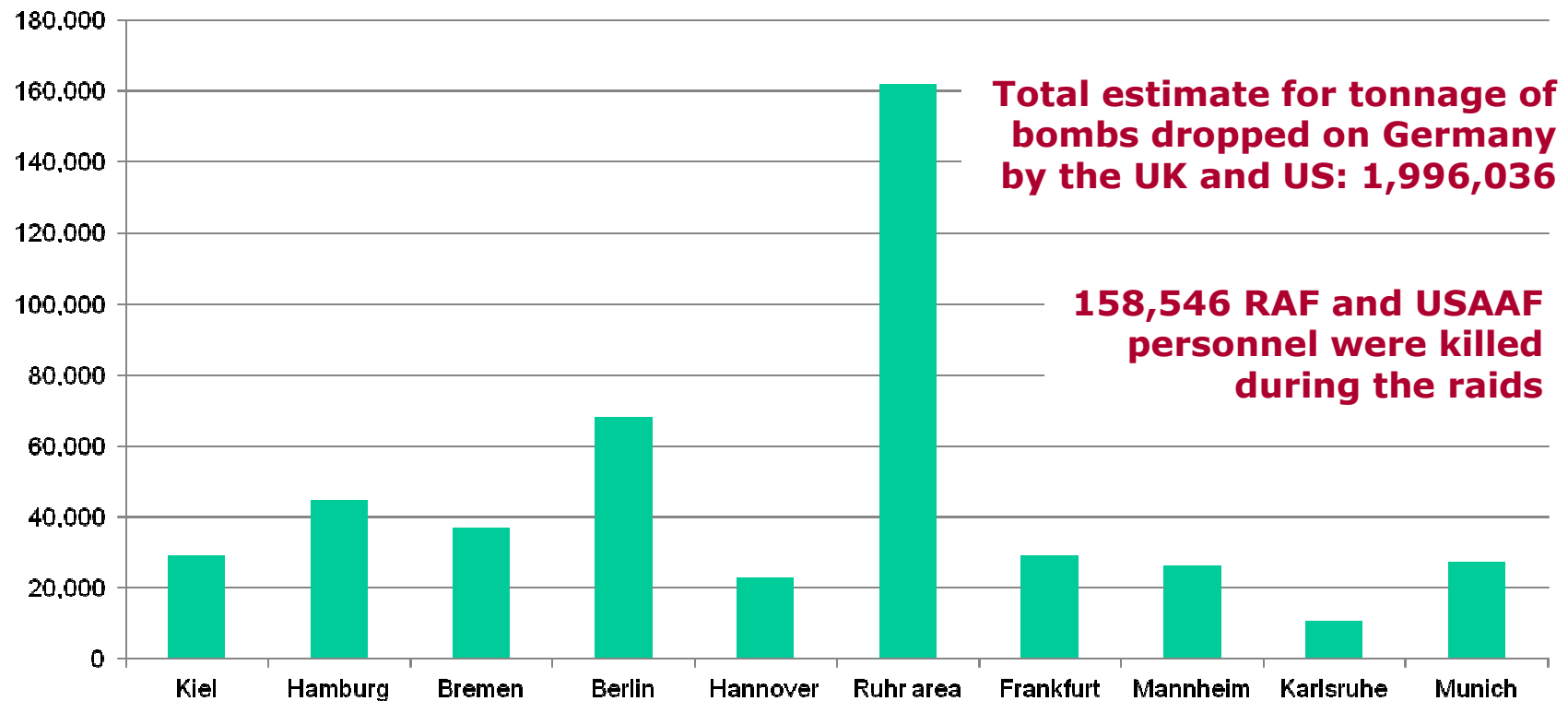
Bombing data from central London used in risk management models





The bombardment

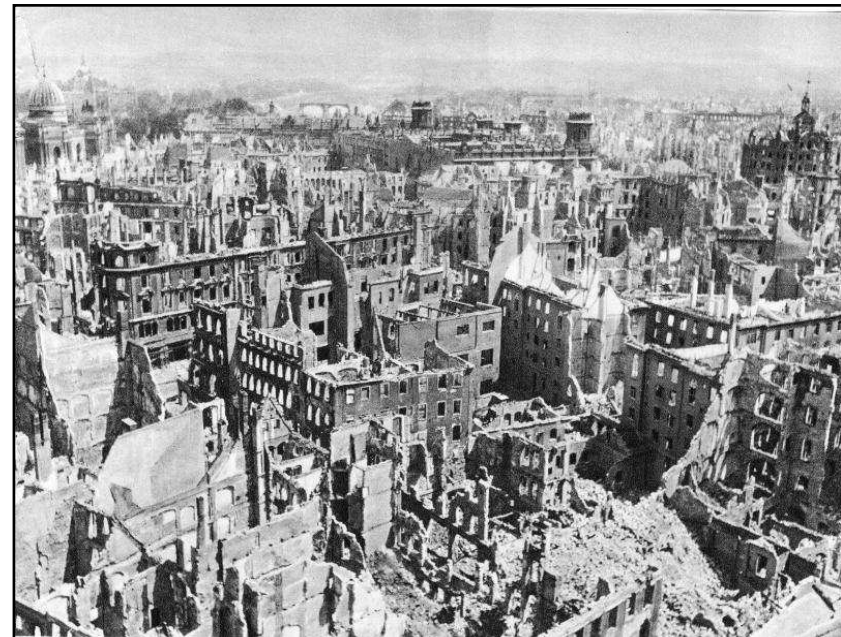
Estimate of metric tonnage of bombs dropped on individual German cities





The aftermath in Germany

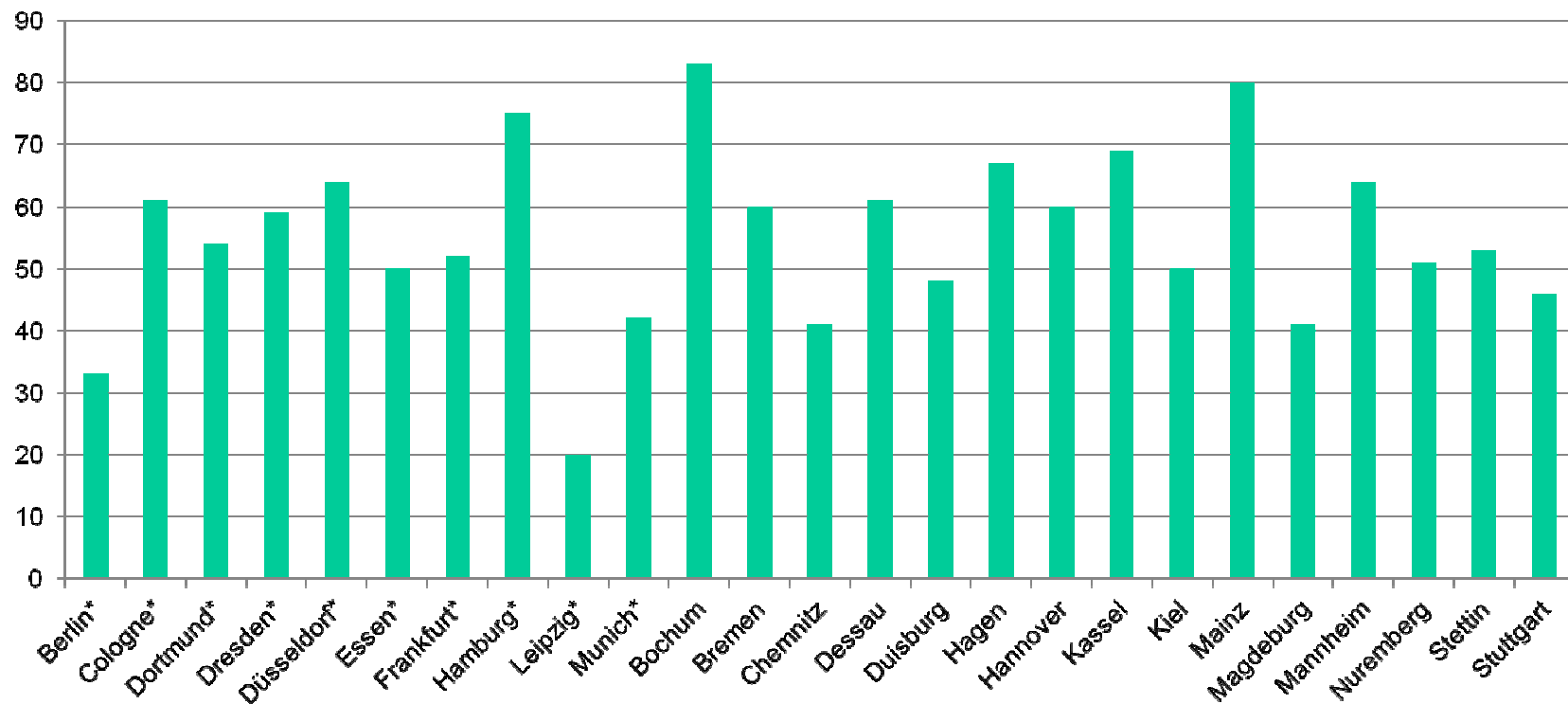
Over 300,000 civilians killed
& 700,000 injured





The aftermath in Germany

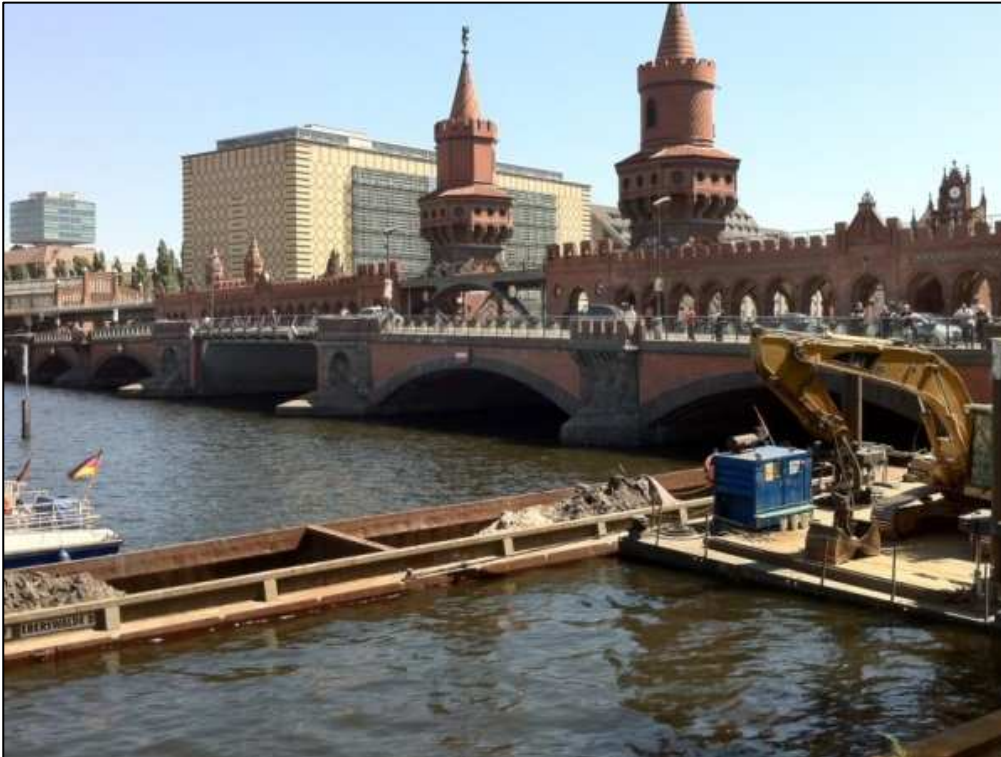
RAF assessments of per cent proportion of built up areas destroyed in German cities





The situation today in Germany

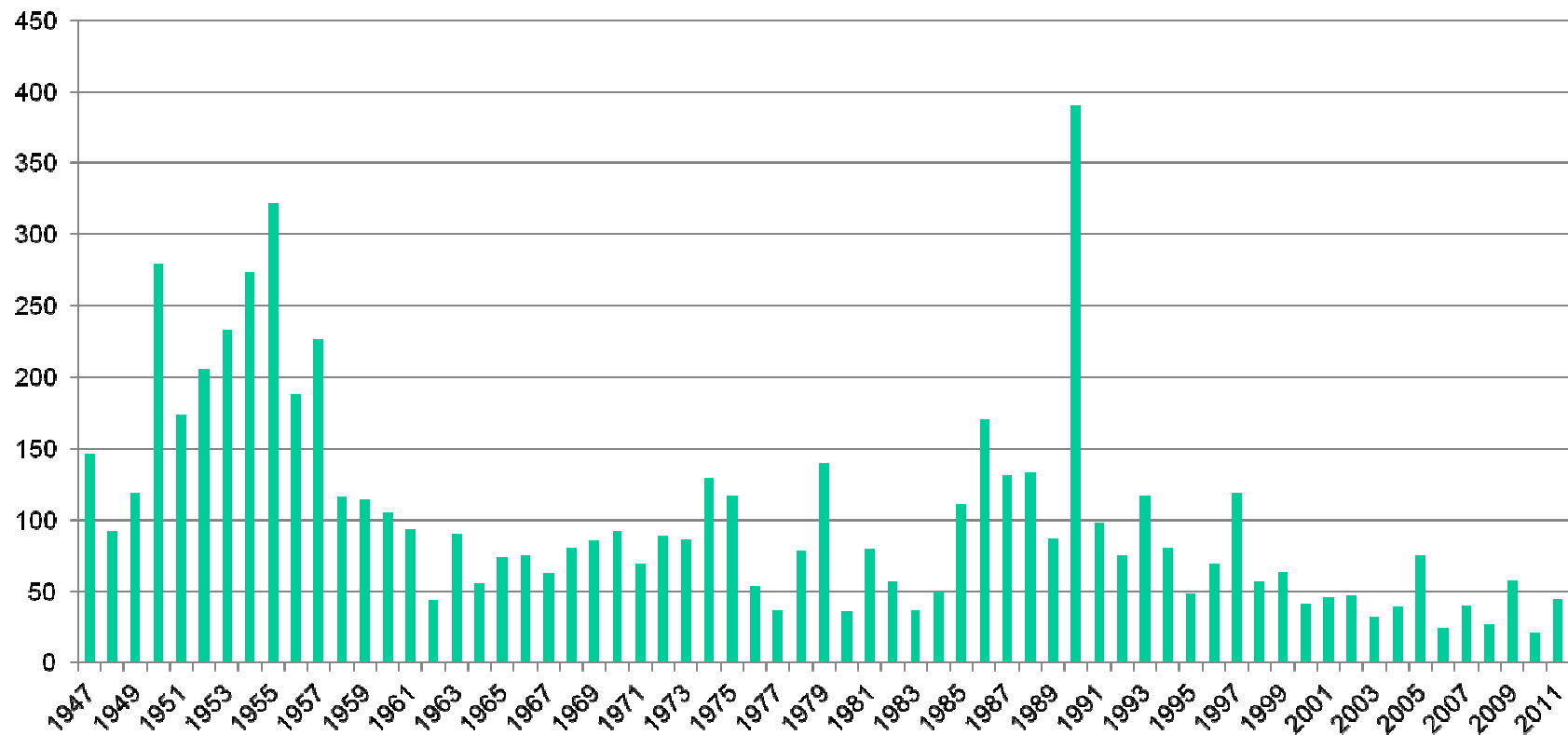
Regular discoveries of deep buried
unexploded bombs and other ordnance
on land and in rivers and lakes





After the war

Annual tonnage (kg) of UXO disposed of in Berlin 1947 – 2011





The situation today in Germany

DER KAMPFMITTEL-BESEITIGUNGSDIENST (KMBD)

Der Kampfmittelbeseitigungsdienst (KMBD) ist zum Zwecke der Kampfmittelräumung den Ordnungsbehörden gegenüber unterstellt und tätig. Er handelt, unabhängig von einer Zuständigkeit, als Teil staatlicher Verwaltung.




VORSICHT FUNDMUNITION
Gefahr aus der Vergangenheit

ZDPol
Zentraldienst der Polizei des Landes Brandenburg
Kampfmittelbeseitigungsdienst
Verwaltungszentrum B
Hauptallee 110/8
15504 Zossen, OT Wansdorf
Telefon Zentrale: 033 702/214-40
Bürgeransche: 033 702/214 110 und 033 702/214 111
Fax: 033 702/214 200
e-Mail: kampfmittelbeseitigungsdienst@polizei-brandenburg.de

Hinweisgeber:
Militärische aus einem
des Landes Brandenburg
Nationaler Dienstleistungszentrum
Heimweg von Tröbitz-Str. 9-13
14477 Trebbin
e-Mail: zmbd@polizei-brandenburg.de
Dienst: Feuerwehrgeselle (Unfallabweisung)
und Wehrangehörige (MSP)
Landes: Potsdam bei Mithras
Polizei: 033 083
Oktober 2008

GEFÄHRLICHER FUND, TÖDLICH SEIN KANN

IM AUFTRAG IHRER SICHERHEIT

Es kann sein, bei Entdecken, bei Wälder-Wald oder in Gärten auf Munition aus 1. Weltkrieg zu stoßen, wie z. B. auf Granaten, Minen oder andere Munition. Auch heute diese Munitionstypen sind nicht verboten, im Gegenteil, ihre Wirkung macht sie noch gefährlicher. Sollten Sie Berührung mit einer Explosive auslösen, gilt immer:

WEG FUNDMUNITION!




WAS SIE BEI FUNDMUNITIONEN ZU BEACHTEN?

Wer Munition findet, muss an seine Sicherheit denken und unbedingt auch andere warnen. Deshalb gilt:

- Gegenstände nicht berühren und liegen lassen
- Fundstelle sichtbar markieren
- Andere warnen
- Sofort das zuständige Ordnungsamt oder die Polizei – NOTRUF 110 – verständigen

Große Gefahr geht auch von ehemaligen Truppenübungsplätzen aus. Besonders gefährlich ist hier freigelegte Munition, die sichtbar sein kann, auch wenn sie als Übungsmunition gekennzeichnet ist.

Wer im Bereich einer Kampfmittelräumung arbeitet, hat einen gefährlichen, aber auch verantwortungsvollen Auftrag zu erfüllen. Der Schutz von Leben und Gesundheit von Menschen ist eines der Gebote der Arbeit dieser Experten.

Jedes Jahr werden durch den Kampfmittelbeseitigungsdienst im Land Brandenburg hunderte von Tausend verschwiegener Munition geborgen und vernichtet, z.B.

- Bomben
- Granaten
- Minen
- Waffen
- Überreste von Kleinmunitio

Risk education and awareness raising



The situation today in the UK

UK responsibility for UXO response

Royal Navy (RN)	Underwater UXO of naval origin UXO below high water mark UXO on RN Property	Except in in-land lakes and rivers
Army	WW2 German air delivered UXO Unexploded land service ammunition	Except UXO on RN or RAF property

UXO associated with construction projects have for decades been treated commercially with mitigation approaches being the responsibility of the developer

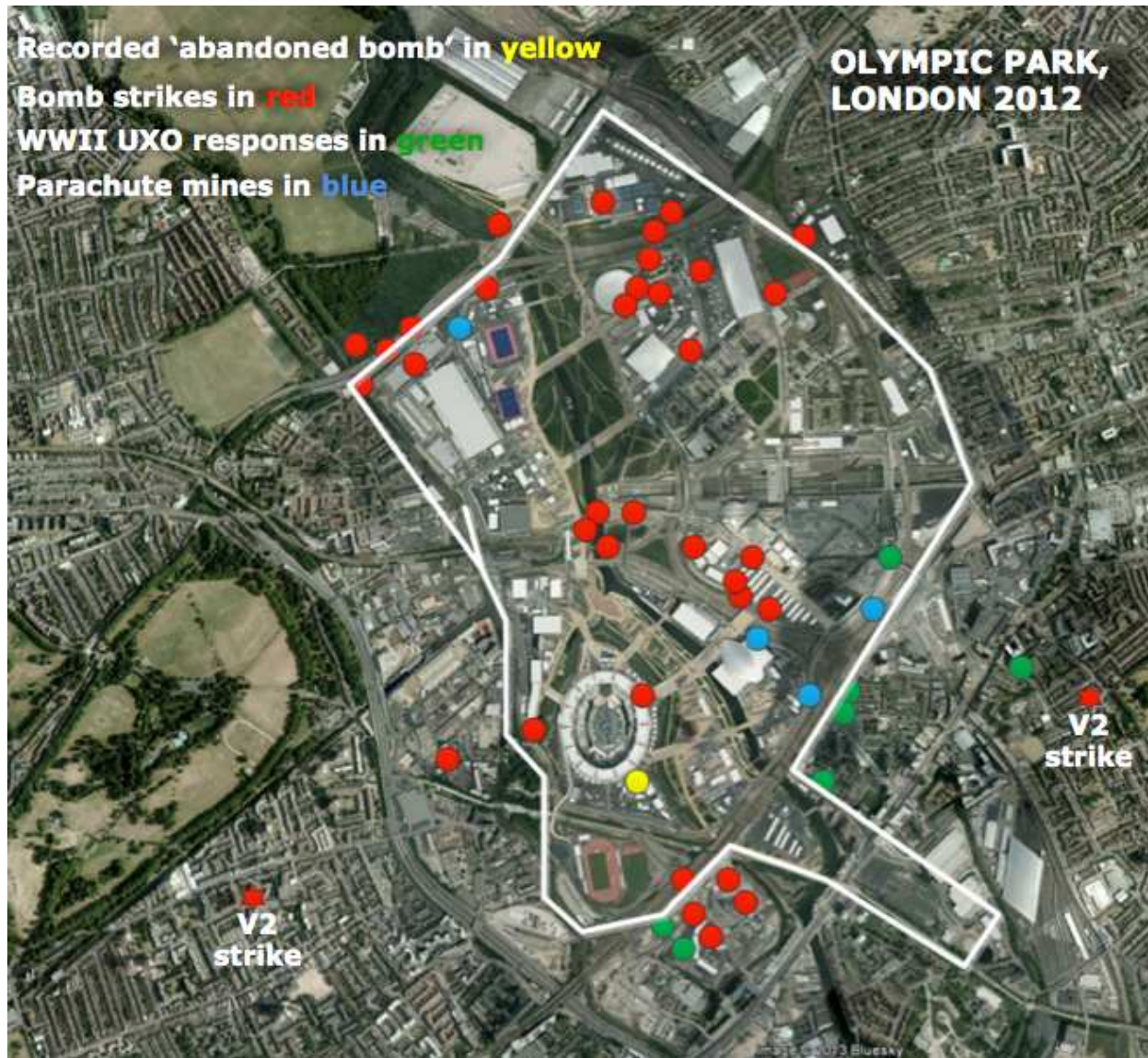
Responsibility for all WWII UXO response is due to be fully contracted out to civilian companies in 2014



London 2012 Olympic Park



Locations of bomb strikes during the Blitz only





London 2012 Olympic Park



Prescott Lock 1000kg UXB found close to the Olympic Park

- > Risk assessment
 - > 70% chance of finding at least one UXB on site
 - > No special measures for excavation and demolition to <1m
 - > Onsite specialist supervision during deeper construction works
- > Limited proactive search by borehole magnetometers
- > One incendiary discovered



Berlin & Brandenburg

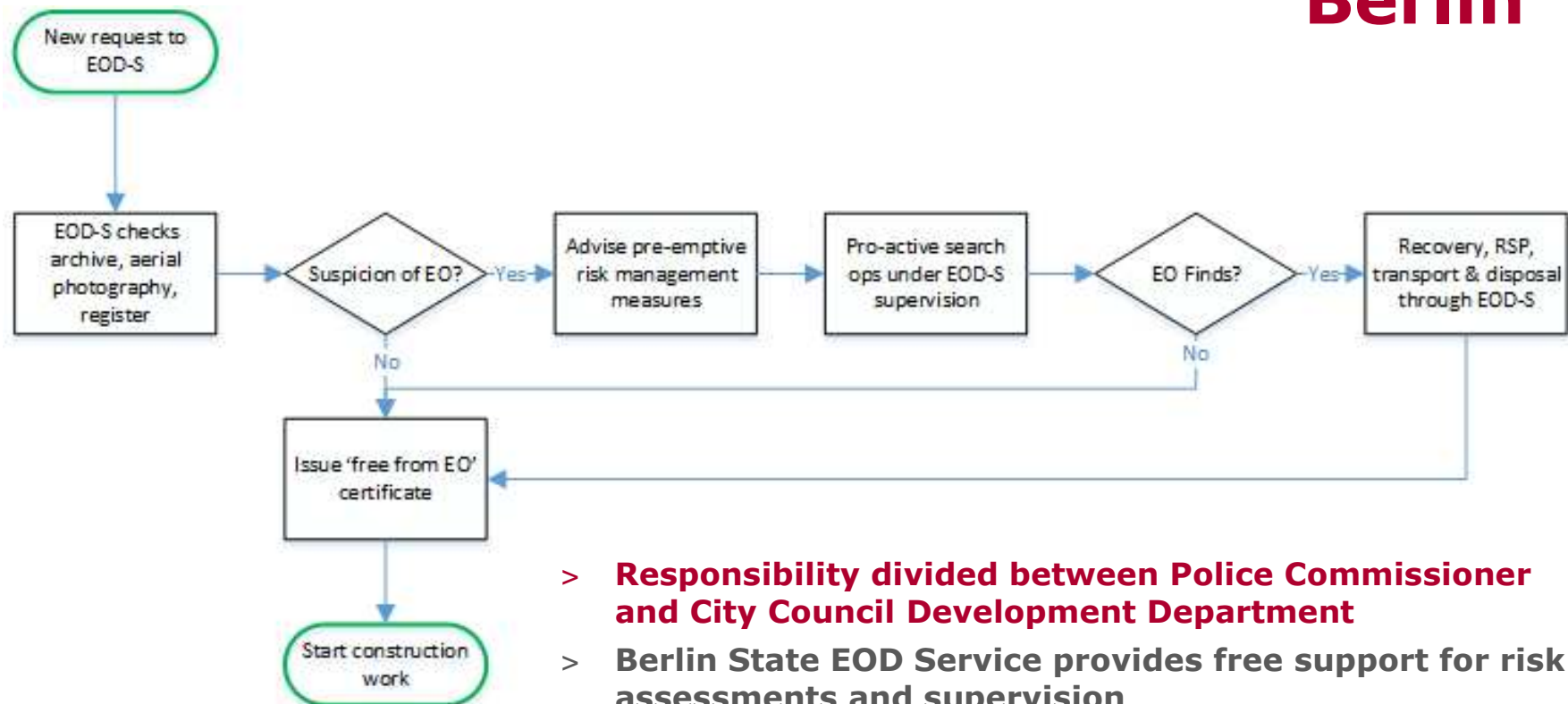
Kampfmittelverdachtsflächen des Bundeslandes
Brandenburg



- > Total land area 29,500 km²
- > Current SHA 3,800 km²
- > Off limit area 800 km²



Berlin



- > **Responsibility divided between Police Commissioner and City Council Development Department**
- > **Berlin State EOD Service provides free support for risk assessments and supervision**
- > **Costs of pro-active search borne by owner/developer**
- > **Cost of dealing with found UXO borne by Berlin State**
- > **Berlin State maintains list of qualified, licensed contractors**



The GICHD initiative aims to explore:

- > Longer term management of residual contamination
- > Policy and practices in place today relevant to other regions of the world (e.g. SE Asia)

Project has just been initiated with the completion of a scoping study of Germany and the United Kingdom (Phase 1) – now planning a considerable expansion into a Phase 2 for 2014



Study on Managing Residual Contamination:

**Phase 2: Nov 2013 to
 Dec 2014**



Phase 2: Component One

> Expand Countries studies and compile data from multiple sources

	Themes	Level of Contamination (density, duration, #, area, per-sonal Res)	Primary Responders (mil/civ/com)	Information Sharing/ Storage / Risk Management	Policy Transition and Timeline	Resources	Gov't Budgets	Prevalence Methodology/Technique	Primary Responders (mil, civ, com)	Commercial Infrastructure	Transparency (Political, Legal, Enable)	Laws (Weapons, Environment, Cons)	Resources \$	Resources	Resources	Who funds?	Bomb Degrading	Information Sharing/Storage/Regist	Lessons Learned
UK																			
Germany																			
France																			
Italy																			
Poland																			
Belgium																			
Finland																			
Japan																			
Russia																			
Greece																			
Malta																			
Vietnam																			
Laos																			
cambodia																			
Korea																			
Philippin																			
Palau																			



Phase 2: Component Two

- > Context assessment of findings, analysis, comparison, contrast





Phase 2: Component Three

> Applications of Risk Management Modelling in ERW Response and Policy Design

hazard

PROBABILITY x SEVERITY x EXPOSURE

PROBABILITY x CONSEQUENCE

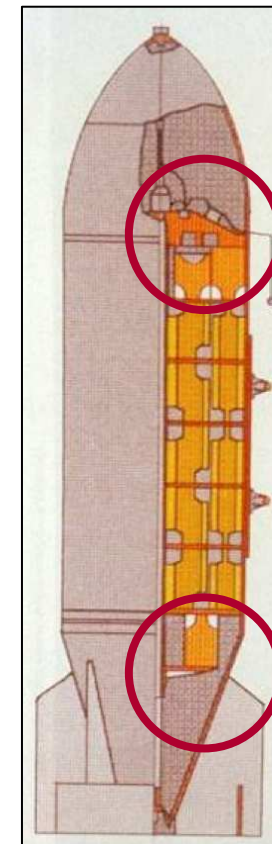
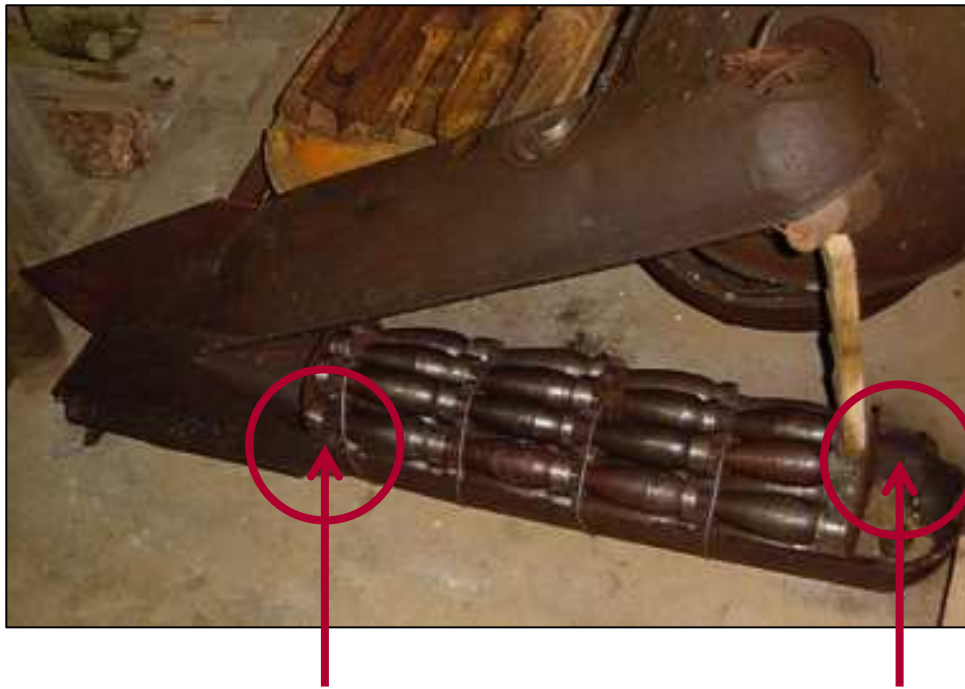
disaster





Phase 2: Component Four

- > Aging of of explosives and mechanical components
- > Comparison of ordnance between WWII and Vietnam era





Phase two: Component Five

- > Assemble, organise findings, communicate



Creation of an on-line archive of relevant documentation



> Dissemination of findings/ transfer of knowledge

To include:

- >Regional workshops in South East Asia**
- >Specific country workshops**
- >Study tours**
- >Translation and provision of relevant documentation**

Assisted by a relevant local agents/ champions in select countries to be engaged in the project early in 2014



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