Defence Science and Technology Laboratory

Little Heath Site Investigation

Gareth Johnson

Mark Rogers

Aim

- Introduction
- Background - Little Heath former Forward Filling Depot (FFD)
- Site Investigation
- Discovery of CW munitions

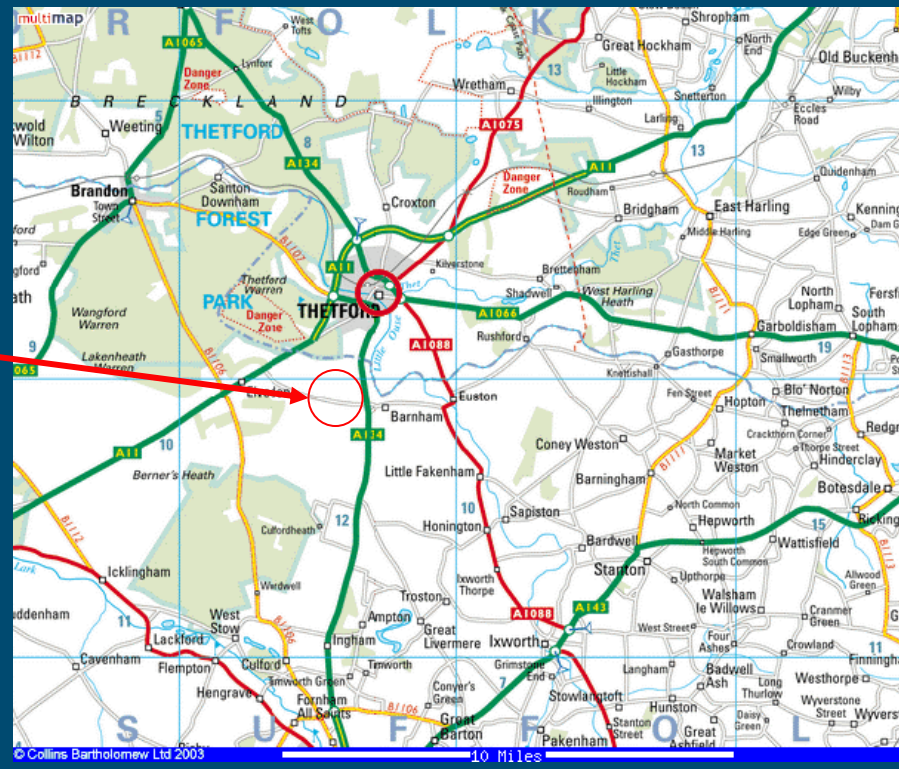
- Mark Rogers to present;
  - CW munitions finds
    - Further investigation
    - Recovery/remediation
- Summary

Introduction

- Project Cleansweep
  - Assessment of CW contaminated land sites within the UK
  - MoD core project team led by Defence Estates, including; Dstl, RAF and Environmental Consultants
  - Land Quality Assessment
    - LQA 1 - desktop report
    - LQA 2 - intrusive site investigation
  - Little Heath required further data from intrusive soil/water sampling to assess residual CW contamination

Little Heath site location

- Located near Thetford, Barnham in Suffolk



Little Heath background

- Little Heath was a WWII Forward Filling Depot (FFD)
  - 3 underground pots storing up to 500 tons of mustard
- Munitions were filled at the site until 1945
  - 30, 65, 100 and 250 lb Light Case Aircraft Bombs
  - 500 and 1000 lb Spray Tanks
- Post 1945 decanting and disposal of munitions
  - Disposal of munitions by incineration on site or transferred to other sites for disposal
- Site decommissioned by 1954
  - Pots emptied, pipework dismantled, burnt within the pots and pots sealed
- Site sold back to Elveden Estates in 1965
- In 1990's RAF excavated contents of the pots, carried out a further decontamination and then backfilled

Little Heath former FFD buildings

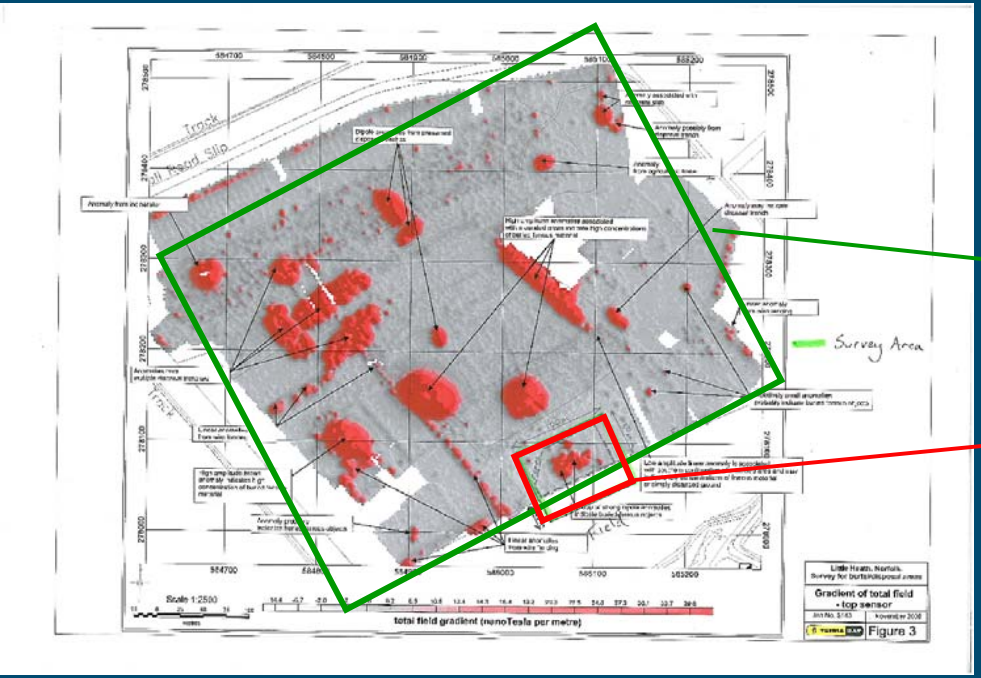
- Former FFD buildings presently remaining

Little Heath aerial photo

Little Heath Site Investigation

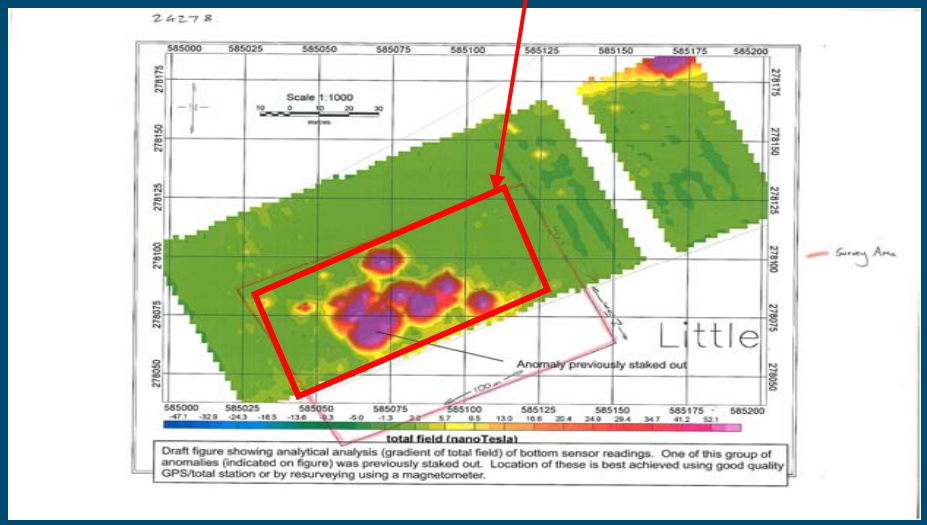
- Land Quality Assessment
  - LQA 1
    - Desktop study carried out by ENTEC Consultants
    - Identified potential areas of residual CW contamination to target intrusive sampling
  - LQA 2
    - Passive soil gas sampling
    - Geophysical survey
      - To target ‘non-toxic’ and ‘toxic’ dumps within the disposal field
    - Intrusive soil sampling and bore holes
      - Mustard pots area, around FFD buildings and disposal field
  - LQA 3
    - Results - factual reports being completed by ENTEC Consultants
      - Initial indication that there is some residual CW breakdown products

Little Heath geophysical survey of disposal field



- Geophysical anomalies in red match up with historic maps and features on the ground
- But, one anomaly did not (red boxed area)

Discovery of CW munitions



- Disposal field
  - More detailed geophysical survey
  - Anomaly area approx 65 x 45 m required further investigation
  - Trial pit to investigate
  - Discovery of 1 x 100 lb and 1 x 65 lb US aircraft bombs and a glass jar
  - Reburied, area fenced off, then further planning

Plan to deal with CW finds

- Phased approach for further assessment of CW munitions
  - Phase 1
    - Remove 100 lb and 65 lb munitions and glass jar
  - Phase 2
    - Further investigation of geophysical anomaly area
  - Phase 3
    - Recover all CW munitions and return to Dstl for disposal
- Mark Rogers to continue with presentation

Phase 1 - Remove 100 lb and 65 lb munitions and glass jar

Recovery and transportation of:

- 1 x 100 lb US Aircraft Bomb
- 1 x 65 lb Light Case Aircraft Bomb
- 1 x liquid filled glass jar

- Glass jar to be sampled and analysed

Phase 1
Vapour Containment System (VCS)

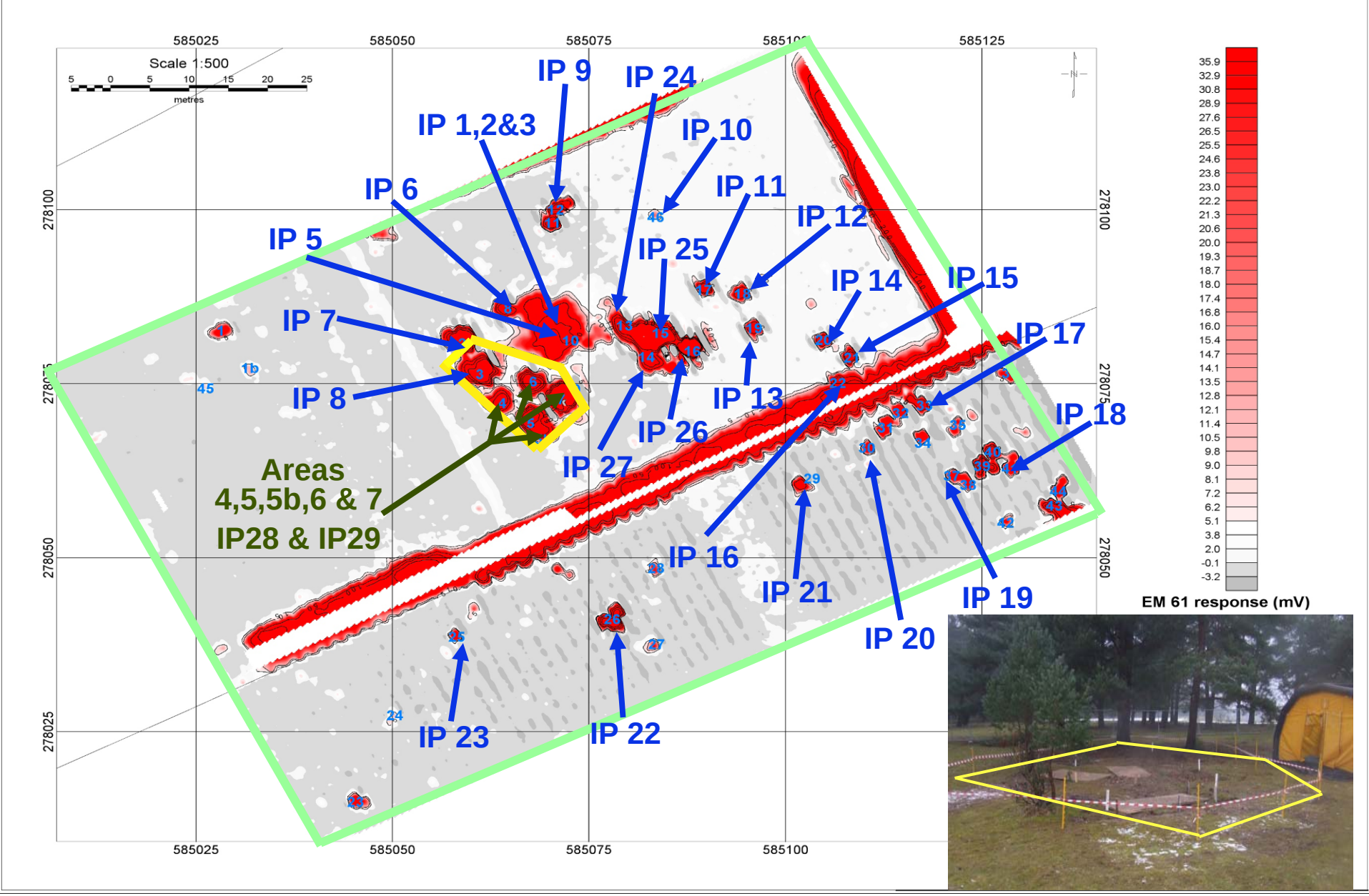
Phase 1
Liquid filled glass jar

Phase 1
100 lb US Aircraft Bomb

Phase 1
65 lb Light Case Aircraft Bomb & EOD Explosive testing

Phase 2 - Further investigation of geophysical anomaly area

- Determine the scope of any further munition recovery operations that may be required
- A more in-depth magnetometer survey was undertaken
- 29 Inspection pits around the anomalies to determine what was present
  - i.e. munitions (type and quantity), chemical contamination, scrap, etc
- No munitions or artefacts were removed from site during Phase 2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IP 8
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IP 18
IP 26
IP 27
Areas
4,5,5b,6 & 7
IP28 & IP29
IP 16
IP 21
IP 19
IP 20
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IP 22
35.9
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27.6
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9.8
9.0
8.1
7.2
6.2
5.1
3.8
2.0
-0.1
-3.2
EM 61 response (mV)

Phase 2
Summary of finds

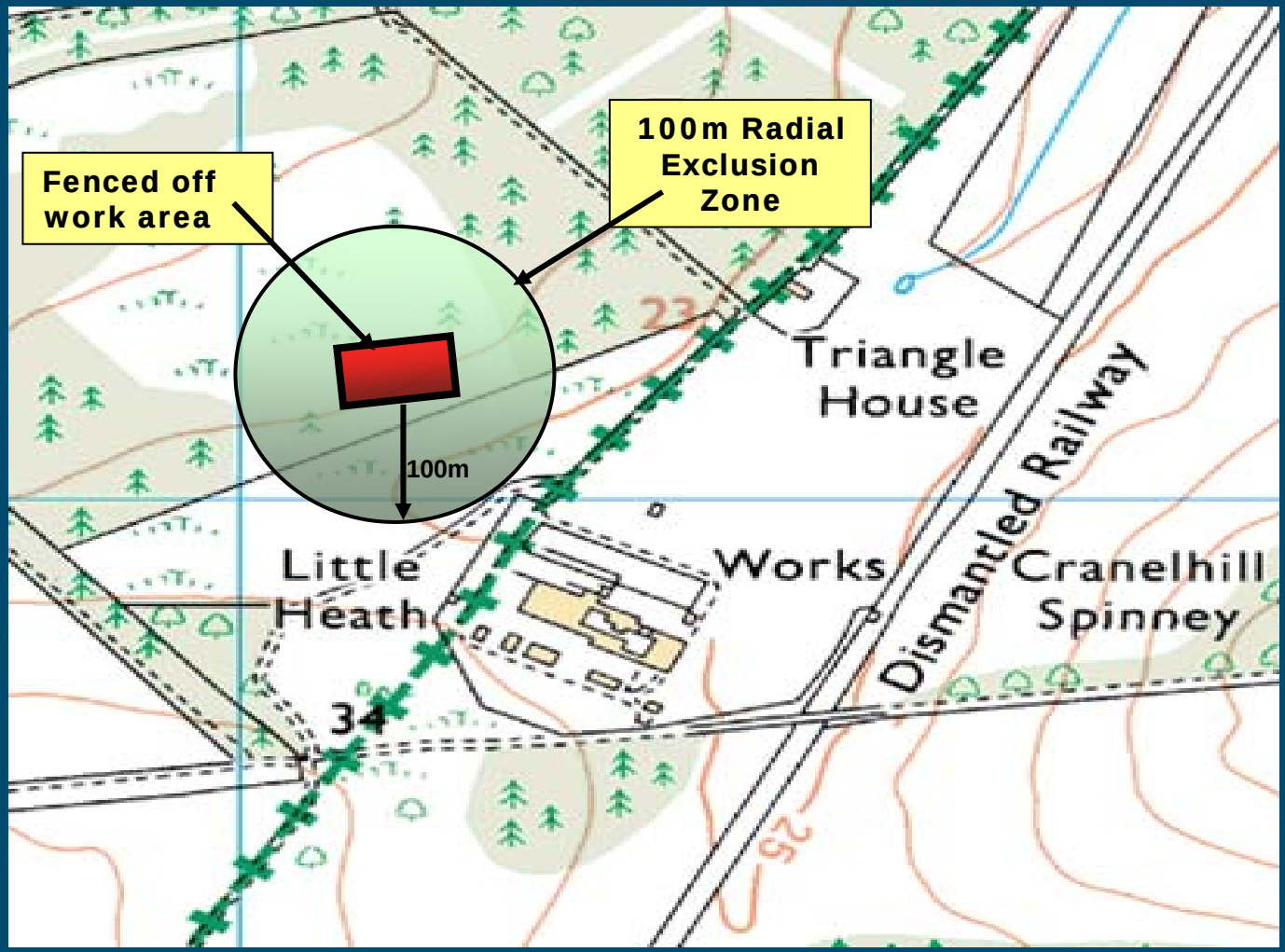
- Within approx. 10 x 14 m marked area on previous slide
  - 65 lb and 100 lb US Aircraft Bombs
  - 400lb spray tank
  - Concrete plinth, 205 litre drum, burning trays and burning residues

- Other areas of the anomaly
  - Metal fence posts/wire
  - Building rubble and general metallic scrap

Phase 3 - Recover all CW munitions and return to Dstl for disposal

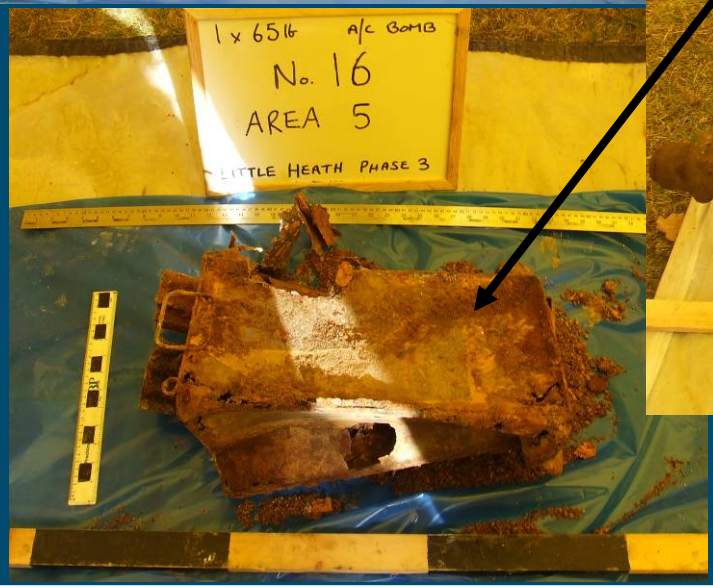
- Remediation of areas 4, 5, 5b, 6 & 7. Area size 10 x 14m
- Removal of 65 lb, 100 lb US Aircraft Bombs & Spray Tank
- Removal of any other artefacts / scrap munitions
- Sample soil under items
- Removal of contaminated soil
- Landscape ground (return topsoil and turf)
- Return recovered items to Porton Down for disposal

Work area and exclusion zone



Phase 3
Ground preparation

Munition types recovered



- 100 lb US A/C Bomb
- 65 lb LC A/C Bomb
- 400 lb Flying Cow Bomb

100 lb US Aircraft Bombs & 65 lb Light Case Aircraft Bombs

8 x 100 lb Bombs visible in side wall of pit.

65 lb LC A/C Bomb in pit

400 lb ‘Flying Cow’

Glass jars containing mustard

Soil samples and removing contaminated soil

Totals

- Total Jars = 4
- Total Munitions = 42
- Contaminated soil = 27 Bins
- Scrap Metal = 7 Bins

Completion.

- The top soil and turf were replaced
- Final Samples were taken of the top soil

Summary

- Land Quality Assessment uncovered unexpected CW munitions and glass jars of mustard
- Dstl tasked to undertake further identification, investigation, recovery and disposal
- CW items have been declared to OPCW