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Harwell decommissioning– lessons learned
End states / delicensing

Record keeping – challenges, approach and lessons learned

Angela Bartlett (RSRL)
IMAGES (GIS) and Delicensing Project Manager

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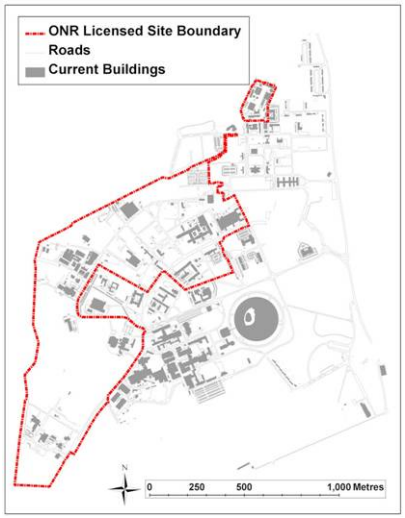
DELICENSING RECORDKEEPING

- Introduction: 70 years of records...
- Why are records required for Delicensing?
- Harwell's approach to Delicensing Recordkeeping
- Delicensing Project Example
- Lessons learnt

Harwell 1946



Harwell 2012

Record keeping – challenges, approach and lessons learned

RECORDING HARWELL: THE CHALLENGE

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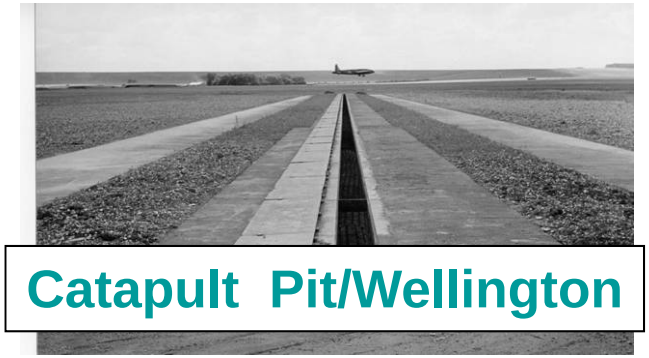
RSRL- 70 YEARS OF RECORDS...

- Industrial use of Harwell site dates from RAF era to present
- Civil nuclear power research 1946 – 1990s
- 6000 scientists and technical staff employed at its height
- Originally ~ 107 hectare licensed site (now 90ha)
- 10s of kilometres of drainage systems
- IMAGES: 737 main building records (1900 individual sub records), plus over 7,000+ documents and 7500+ photographs
- Complex contaminated land legacy
- Large volumes of historical information held by varied sources (TNA, NRS Archive, National Monument Record etc)



Catapult Pit/Wellington

B3 Bullet Hole

B353 Kiln

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HARWELL (1960s)- Q: How to Delicense?

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THE ANSWER- GOOD RECORDKEEPING...

1. What activities occurred in a particular area?
2. What current and legacy infrastructure is present?
3. What type of clean-up work has been done?
4. How do you define area boundaries?

1. Records- Historical building schedules
2. Records- Infrastructure schedules, archive drawings, AutoCAD/GIS
3. Records- post decommissioning reports, safety cases etc
4. Records- maps/photos: current and historical infrastructure/buildings
5. Records- building usage, accident/incident reports
6. Records- recording work done by area (documents/data)
7. **Records- to target legacy features, justify area of concern ('grid size') for systematic sampling**
8. **Records- use standardised data formats for data capture and storage to allow analysis in GIS/statistical software tools**

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Record keeping – challenges, approach and lessons learned

HARWELL'S APPROACH TO DELICENSING RECORDKEEPING

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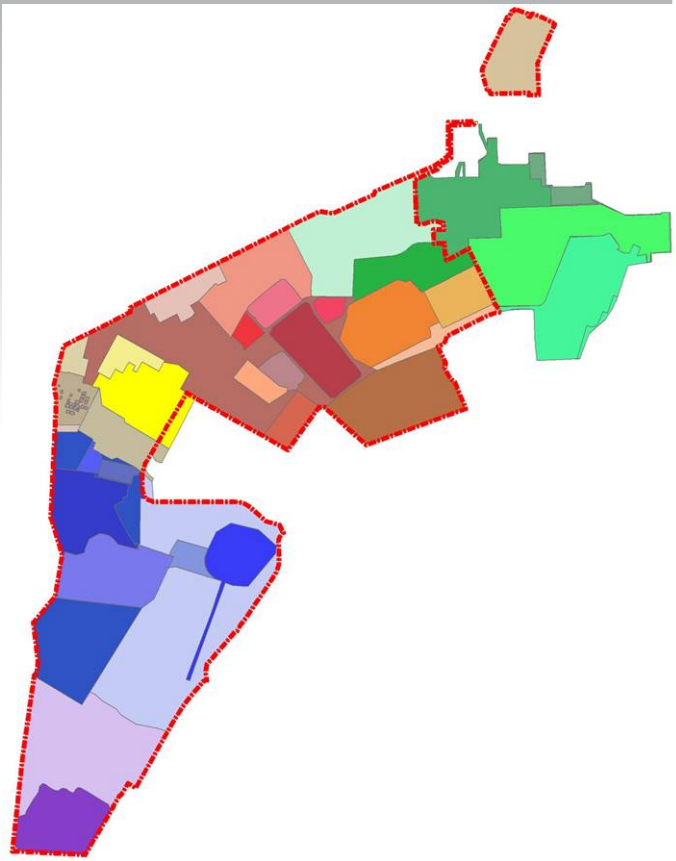
PROGRESSIVE SITE RELEASE

- Zoned according to
  - site history
  - site infrastructure
  - main facilities
  - decommissioning strategy
- Need structured recordkeeping to allow effective planning of site release
- Large volumes of many types of records for each delicensing area
- Targeted characterisation to characterise and remediate legacies followed by validation surveying and sampling
- Delicensing- lots of questions, what are the answers?



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INFORMATION MANAGEMENT: THE CHALLENGE

- Large volume and range of project data
- Need to align with wider site data management
- Act early!

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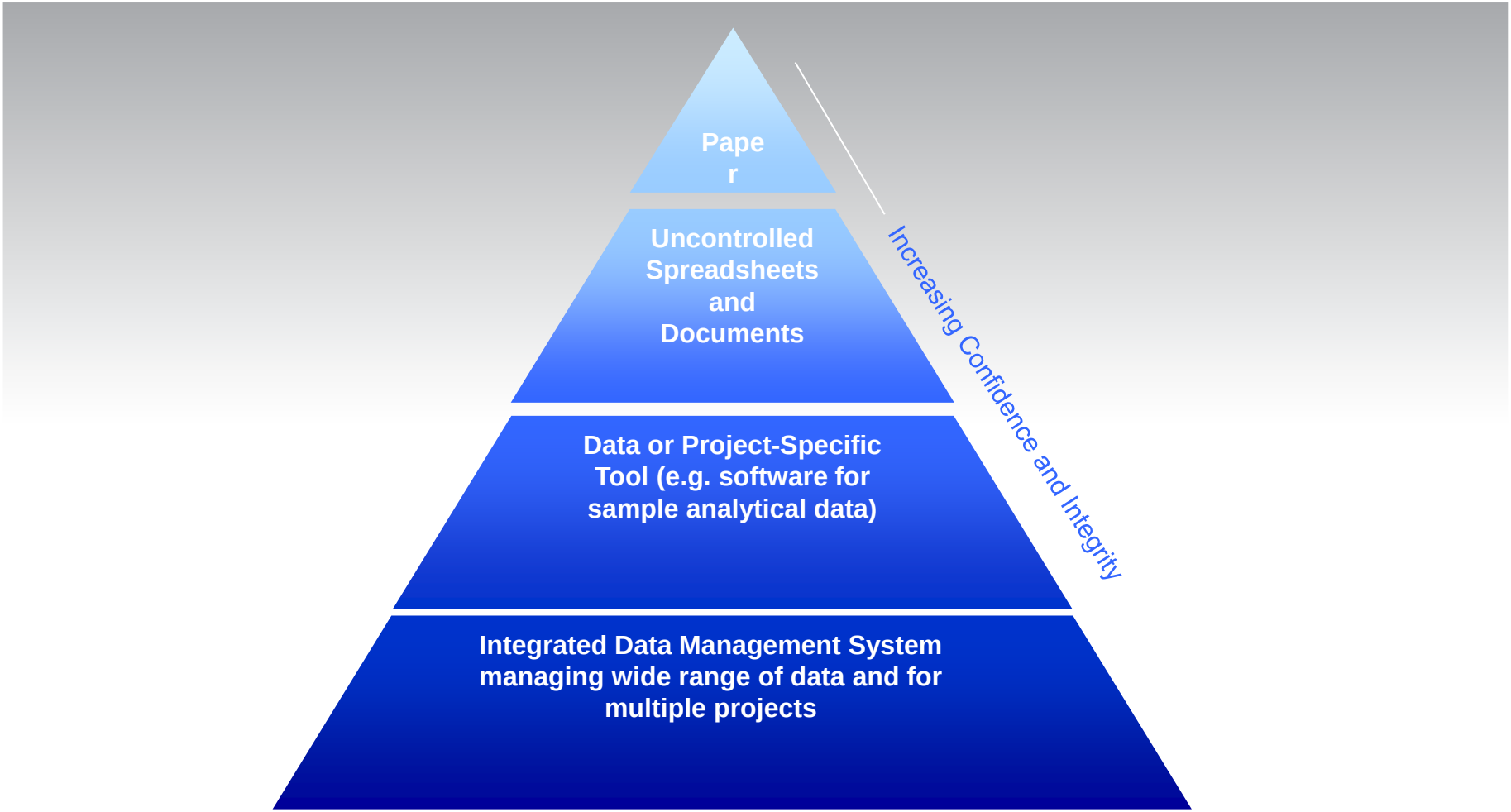
RECORDS MANAGEMENT OPTIONS



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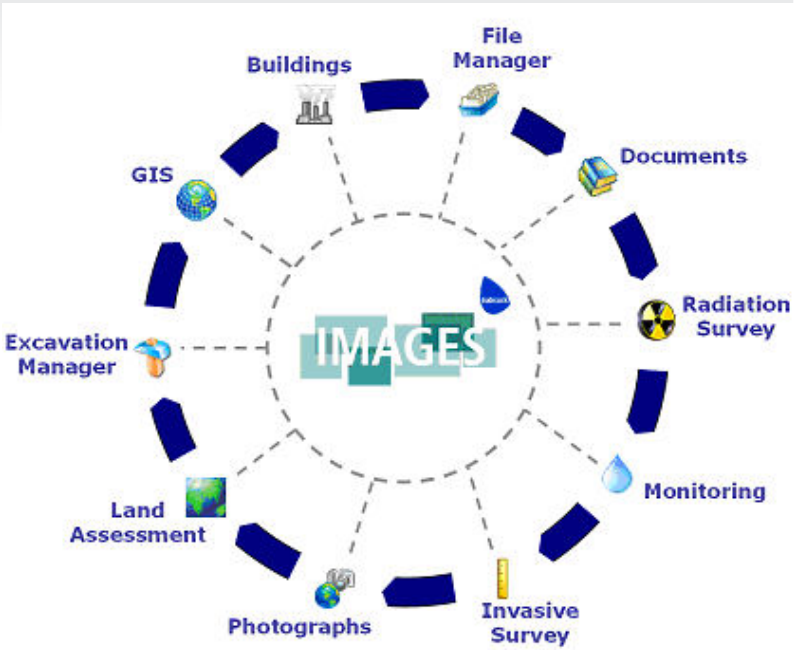
CHOSEN SOFTWARE SOLUTION (IMAGES)

- Implemented in response to need to manage historical decommissioning records and site characterisation data
- Key features:
  - Standardises data capture
  - Divide data into logical zones
  - Long term data security
  - Links to GIS
  - Revision & quality control
  - Flexible reporting



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IMAGES Harwell

Invasive Survey

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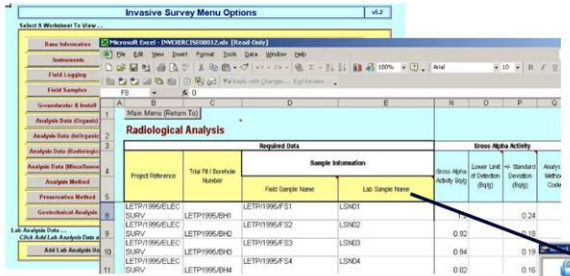
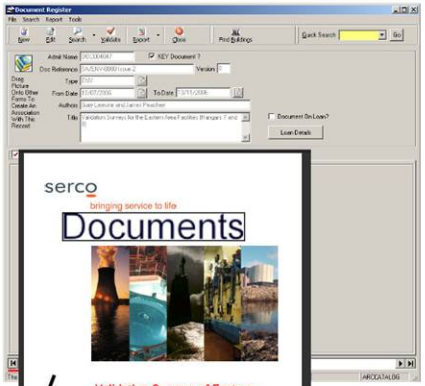
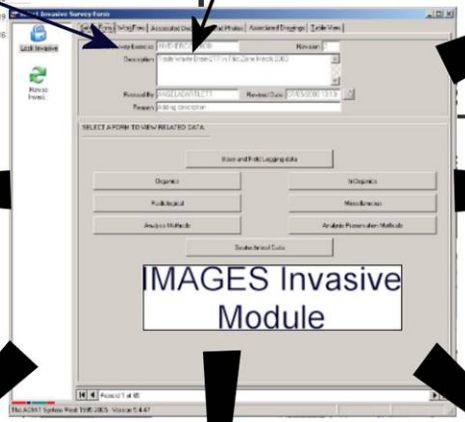
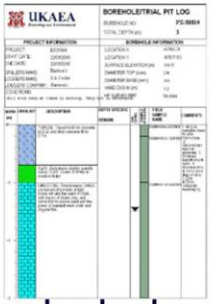


Data Collection



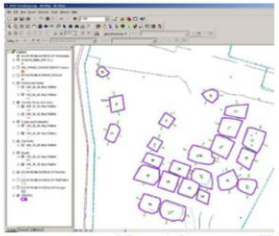
Map Production



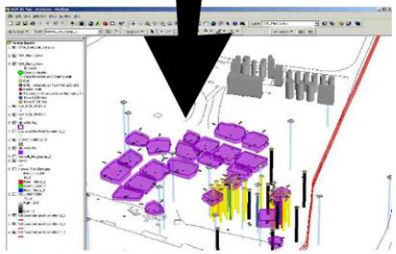


Borehole logs

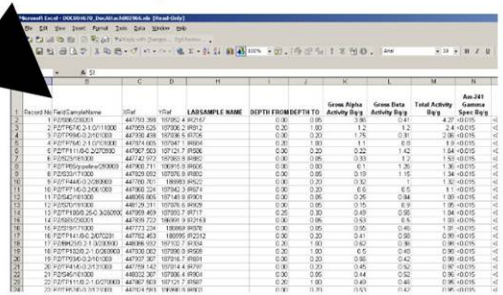
Spatial Assessment



Remediation Planning



Visualisation



Data Assessment/Compilation

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RECORDS TOOL: GIS- SPATIAL ASSESSMENT

- Spatial problems need spatial solutions!
- Patterns can be seen clearly on a map which aren't obvious in data tables…
- Also- sanity checking
  - are all the samples you expected to be there on the map?
  - are the values as expected?
- Spatial populations (lithology, natural background etc)
- Determination of what is an outlier/ 'hotspot'
- Importance of layers of information
  - AutoCAD base mapping
  - Historical drawings
  - GIS/GPS mapping files
  - Surveys/sampling results in IMAGES
  - Data analysis results/symbology

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Record keeping – challenges, approach and lessons learned

USE OF IMAGES: PROJECT EXAMPLE- DELICENSING

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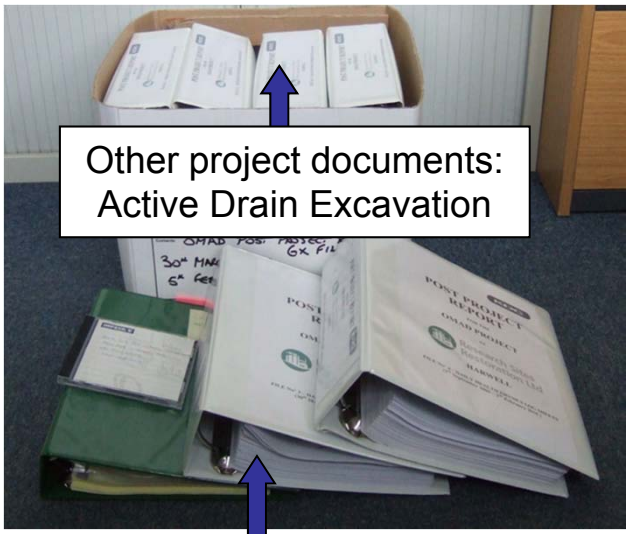
DELICENSING: SUPPORTING DOCUMENTS

- Volume/type of information depends on project complexity
- Quality can be variable for historic records
- Good quality records/reports/data getting to IMAGES need good planning from project outset
- Important that delicensing/site endpoint teams work with other site projects, NOT in isolation



"It's all in the report"- what is?

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NEW RECORDS- OPTIMISING DATA CAPTURE

- Need for good methods of data capture is well known
- Putting this into practice is more difficult
- Aspects of data capture related to
  - Desk Study
  - Contract Specification
  - Field monitoring data collection
  - Logical lab data reporting
  - Data transfer formats from projects
  - Contents of project technical reports
  - Transfer to IMAGES
  - End-use of data

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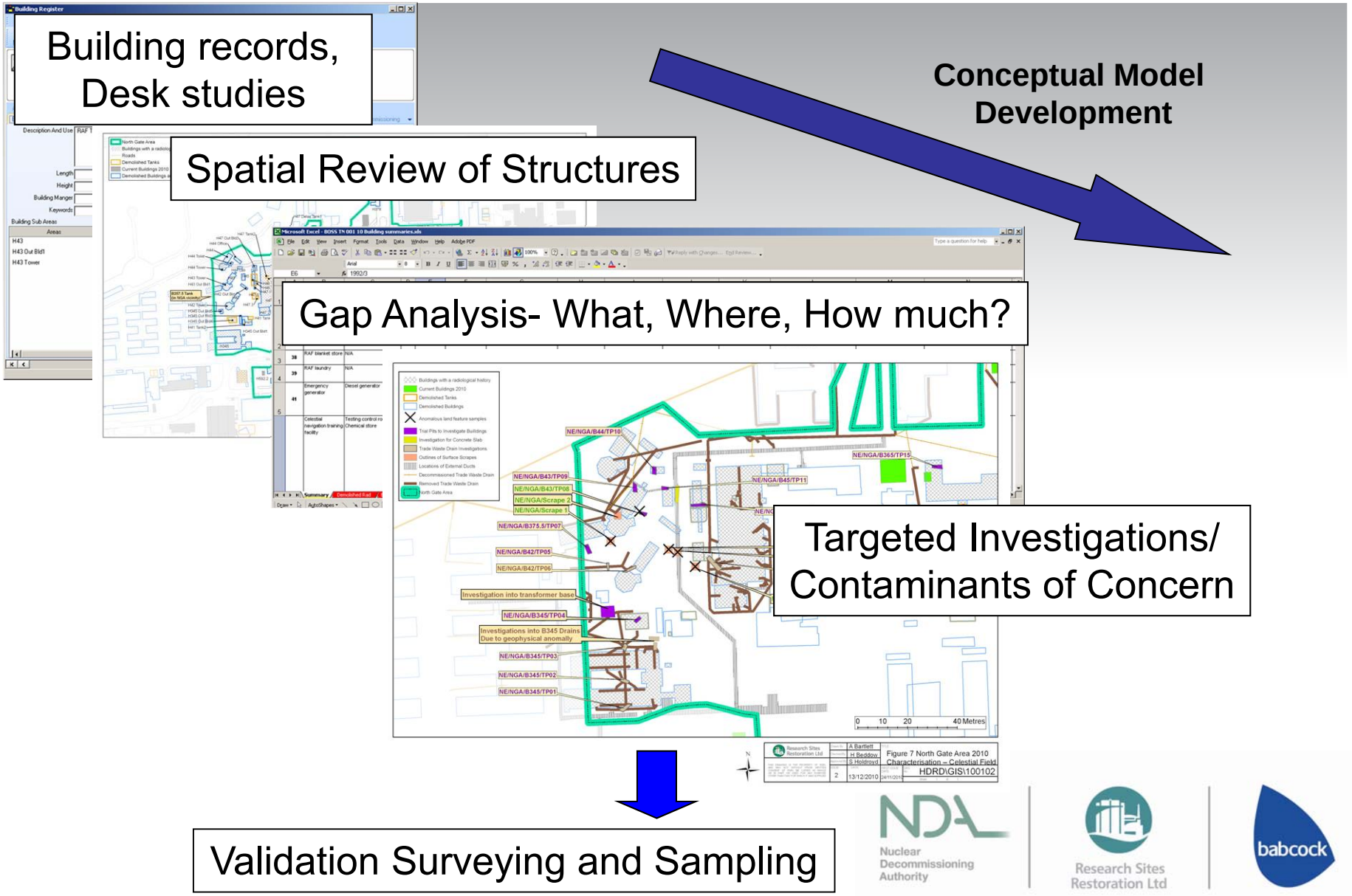
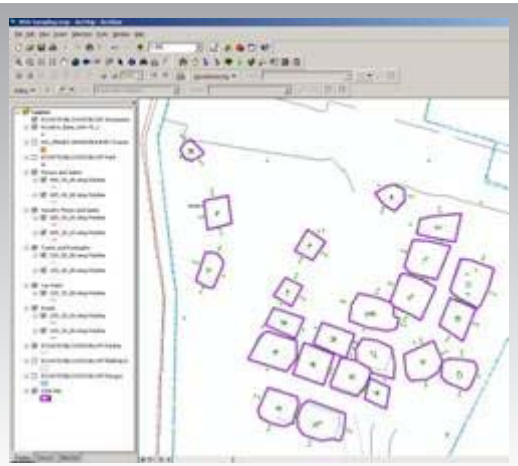
TARGETED CHARACTERISATION



DATA ACCESS AND REPORTING



- Good quality data is of little use if it can't be accessed efficiently and used effectively
- Require access & reporting for all types of target audience
  - Technical (e.g. GIS, database, csv)
  - Non-technical (e.g. maps & charts, interactive web mapping)

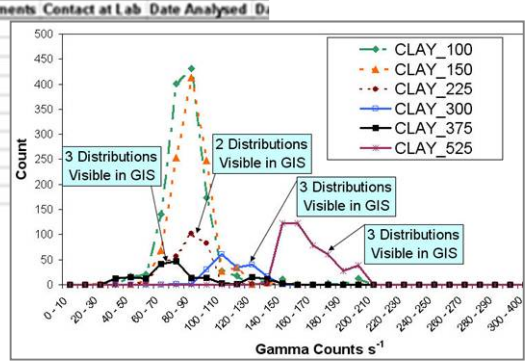
IMAGES

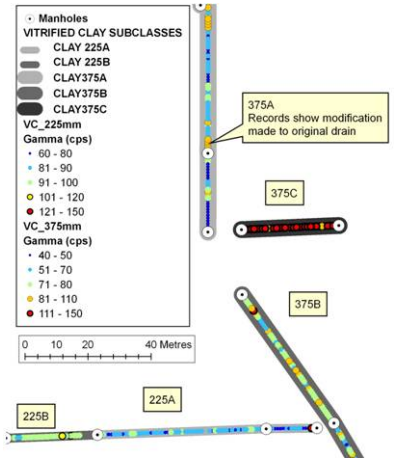
Date:
Created By:

Invasive Survey Report

Format For GIS

Invasive Exercise Ref	Field Sample Name	Comments	Contact at Lab	Date Analysed	Da
INVEXERCISE00001	PZ / TP1 /0-0.2m				
INVEXERCISE00001	PZ / TP1 /0.2-1m				
INVEXERCISE00001	PZ / TP1 /1.6m				
INVEXERCISE00001	PZ / TP2 /0-0.2m				
INVEXERCISE00001	PZ / TP2 /0.2-1m				
INVEXERCISE00001	PZ / TP2 /1.0-2.0m				
INVEXERCISE00001	PZ / TP2 /2m				
INVEXERCISE00001	PZ / TP2 /FBm				





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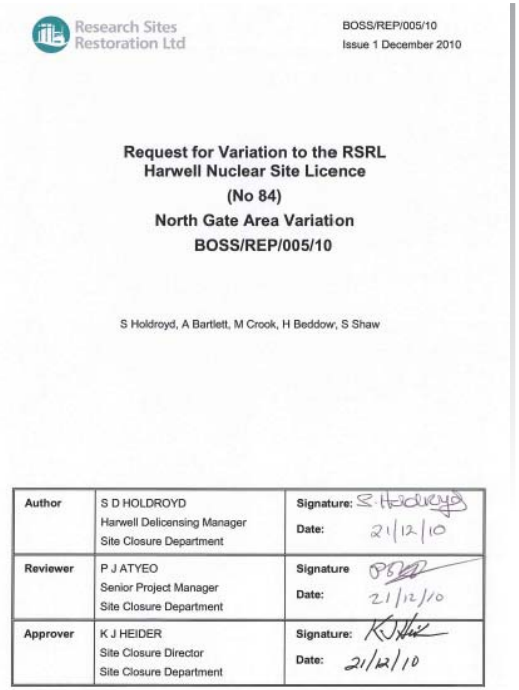
COMPILING A DELICENSING CASE

- 100 hectare site split into 5-10 hectare release cases
- Site works in each area span many years
- Historical records
  - Many buildings, many uses
  - Many decommissioning reports
- Characterisation data for each area
  - 10^5-10^6 gamma survey points
  - 10^3 drain survey data points
  - 10^2 of other radiation surveys
  - 10^2 of intrusive samples analysis
  - Technical reports
- 10s of years of Groundwater data



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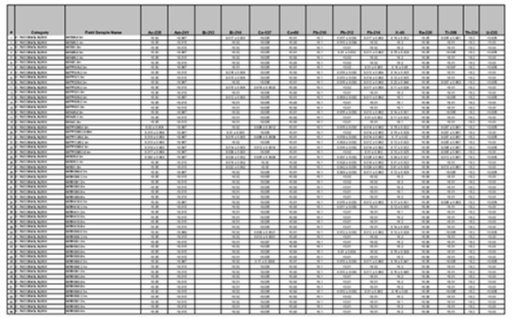
BOSS/REP/005/10
Issue 1 December 2010

Request for Variation to the RSRL Harwell Nuclear Site Licence (No 84) North Gate Area Variation BOSS/REP/005/10

S Holdroyd, A Bartlett, M Crook, H Beddow, S Shaw

Author	S D HOLDROYD Harwell Delicensing Manager Site Closure Department	Signature: S Holdroyd Date: 21/12/10
Reviewer	P J ATYEO Senior Project Manager Site Closure Department	Signature Date: 21/12/10
Approver	K J HEIDER Site Closure Director Site Closure Department	Signature: Date: 21/12/10



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Record keeping – challenges, approach and lessons learned

LESSONS LEARNT

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RECORDKEEPING- LESSONS LEARNT (1)

- Historical and modern data- all is important
- Limitations of documents (paper, pdf, word) v data
  →Consider end use of information
- **Benefits of using database:**
  1. **Data accessibility- who and in what format?**
  2. **Ability to link different data sources**
  3. **Optimising data assessment: automated data QA checks and data processing essential to good quality land quality datasets**
  4. **Efficient compilation of a delicensing case**

Site Licence No: 44 Variation No: 3

NUCLEAR INSTALLATIONS ACT 1965 (AS AMENDED)

VARIATION

of Nuclear Site Licence No. 44 (as varied)

United Kingdom Atomic Energy Authority

Harwell

The Health and Safety Executive, in exercise of its powers under section 3(6) of the Nuclear Installations Act 1965 (as amended), hereby varies Nuclear Site Licence No. 44 (as varied), granted on 17 October 1990 to the United Kingdom Atomic Energy Authority in respect of its Harwell site, by excluding from the site that land hatched in red on the licensee's drawing references HWNL.544/53145_1 (Issue A) entitled 'Harwell Nuclear Licensed Site (Site Licence No.44, Variation No.3)' and dated 29 November 2005 which is annexed hereto, and shown in detail on the licensee's drawing referenced HWNL544/53225_1 (Issue A) entitled 'Detail of Harwell Nuclear Licensed Site Boundary extracted from drawing HWNL.544/53145_1' and dated 19 May 2006 which is annexed hereto.

The Health and Safety Executive is satisfied that there is no danger from ionising radiations from anything on that part of the site which is hereby excluded from the nuclear site licence.

This variation shall come into force on 30 September 2006.

For and on behalf of the Health and Safety Executive

Dr M W Weightman
HM Chief Inspector of Nuclear Installations
A person authorised to act in that behalf

Dated

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Pilot Area Delicensing

RECORDKEEPING- LESSONS LEARNT (2)

- Good records = valuable resource for decommissioners/estimators
- Taking the ‘opportunity of sampling’ to record relevant information to prevent costly reinvestigation but not ‘data for data’s sake’
- Importance of data verification and validation
- Importance of keeping track of site works by area as work progresses
- Using computers to do what they are best at:
  - routine processing of large volumes of standardised data
- **All you are left with is an empty field and the information…**

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