

Contaminated Site Management

Streamlining GIS Workflow from Data to Delivery

Simon Ross
Anna Kjellin
John Lee
26th July 2012
ESRI International User Conference

Overview

Introduction

- Contaminated Site Management (CSM) in the UK

Challenges in the CSM/GIS Workflow

- Phase 1 Assessment
- Phase 2 Investigation

Solutions

Future Development

Introduction

Contaminated Site Management (CSM) in the UK

- A major focus of many environmental consultancies; like most industrial societies the UK has a considerable legacy of land affected by contamination
- Regulatory bodies: Environment Agency, Scottish Environment Protection Agency
- The requirements:
 - **Phase 1** – Desk Study
Aim: to identify potential sources of contamination and determine whether further investigation is required
 - **Phase 2** – Intrusive investigation
Aim: To quantify the nature and extent of contamination

Phase 1: CSM/GIS workflow

Turnaround: Typically 2 - 3 days

Desk
research



Site
walkover



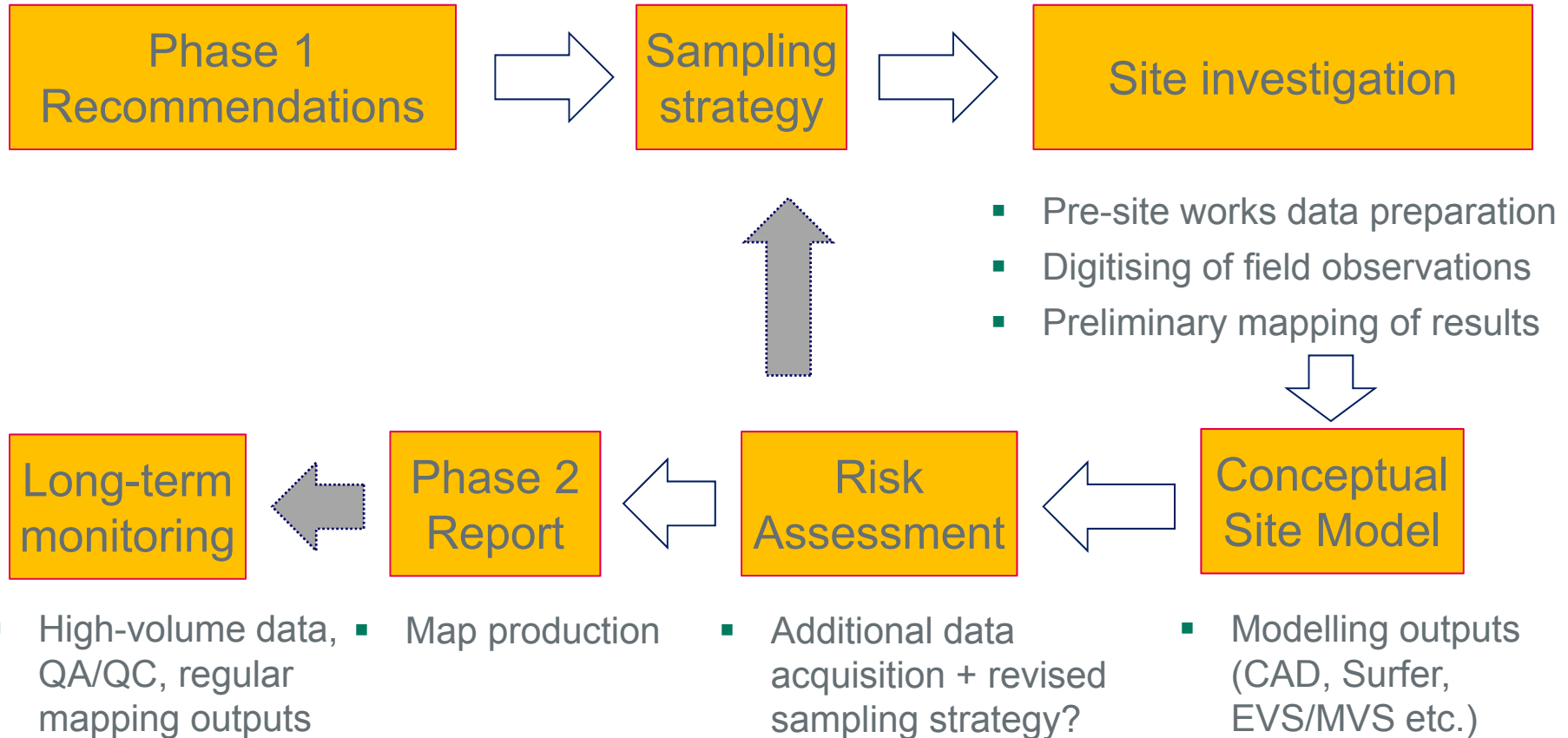
Phase 1
Report

- Acquisition of detailed site layout and key environmental data
- Digitizing of features from historical maps, previous surveys etc.
- Field maps to be used during site walkover

- Digitizing of site observations
- Maps for report

Phase2: CSM/GIS workflow

Turnaround: Typically 4 - 5 weeks



Challenges in the CSM/GIS workflow

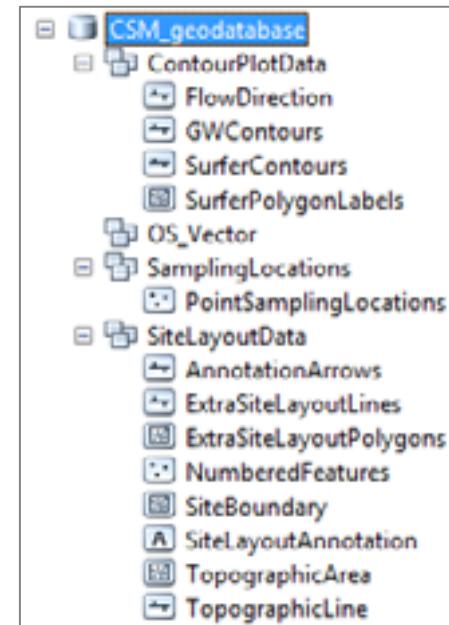
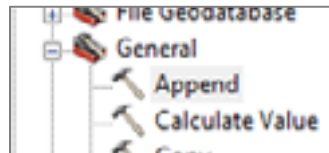
Summary

- Quick turnaround + GIS input at various stages in the process
- Substantial digitizing efforts
- Data formats (modeling outputs, subcontractors etc.)
- Accessibility of up to date information (subcontractors, in-house project teams)
- High volume of data; efficient management of updates, QA/QC

Solutions

Quick turnaround and GIS input at multiple stages

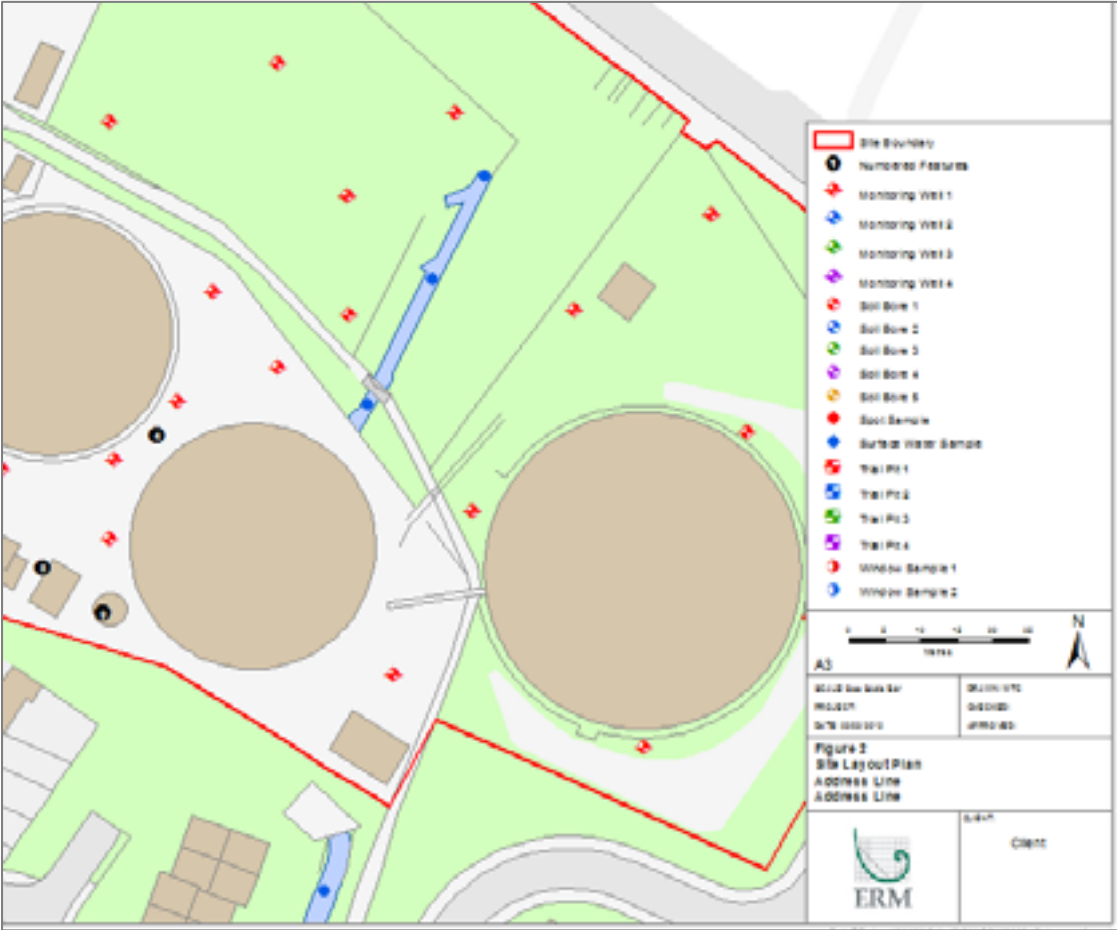
- Streamlined map production process
 - The creation of a customized CSM database and map template
 - Quick and easy purchase of detailed standardized basemaps
 - Training non-GIS staff in standardized figure production



Solutions

Quick turnaround and GIS input at multiple stages

- Map Template Sample



Solutions

Substantial digitizing efforts

- Non-GIS staff trained to use templates
- Digital data capture in the field
 - ArcPad customized Applications
 - CapturX for ArcGIS
 - Scripted import of data in the office
- Daily updates on long-term programs
 - Email field data daily to office team
 - QA only prior to production



Data formats (modeling, subcontractors)

- ArcGIS is the center of the process in initial Phase 1/2 assessments
 - Define file formats and standards for subcontractors (e.g. surveyors)
 - Manages all location based data in single database
- Collates data from multiple sources
 - Groundwater modeling
 - Analytical chemistry data
 - Geological modeling

Accessibility of up to date information

- ArcGIS for Server
 - Extends GIS to a wider user base
 - View, Query, Print and link to documents (logs, field photos etc.)
 - Reducing map production efforts and freeing specialist GIS staff from day-to-day data management



Solutions

High volume of data – efficient management of updates, QA/QC

- Earthsoft EQulS database
 - Sites with frequent long-term monitoring: EQulS substantially facilitates regular visualization of sampling results
 - Data is directly linked to database; QA/QC is improved
 - Additional options for integrating data to other packages
 - STORE DATA ONCE!

Future Developments

Further develop mobile solutions for efficient data capture

- Define global standard device(s)
- Direct import/export to geodatabase – connect to ArcGIS for Server

Increase integration with other CSM tools

- Standardize on EQulS database for analytical data management
- Script data conversion for modeling formats
- Extend use of ArcGIS for Server with further EQulS integration