Consultants of the Year 2010 Winner

JBA consulting

Watercourse Asset and Maintenance Inventory – Meeting the Requirements of the Flood Act

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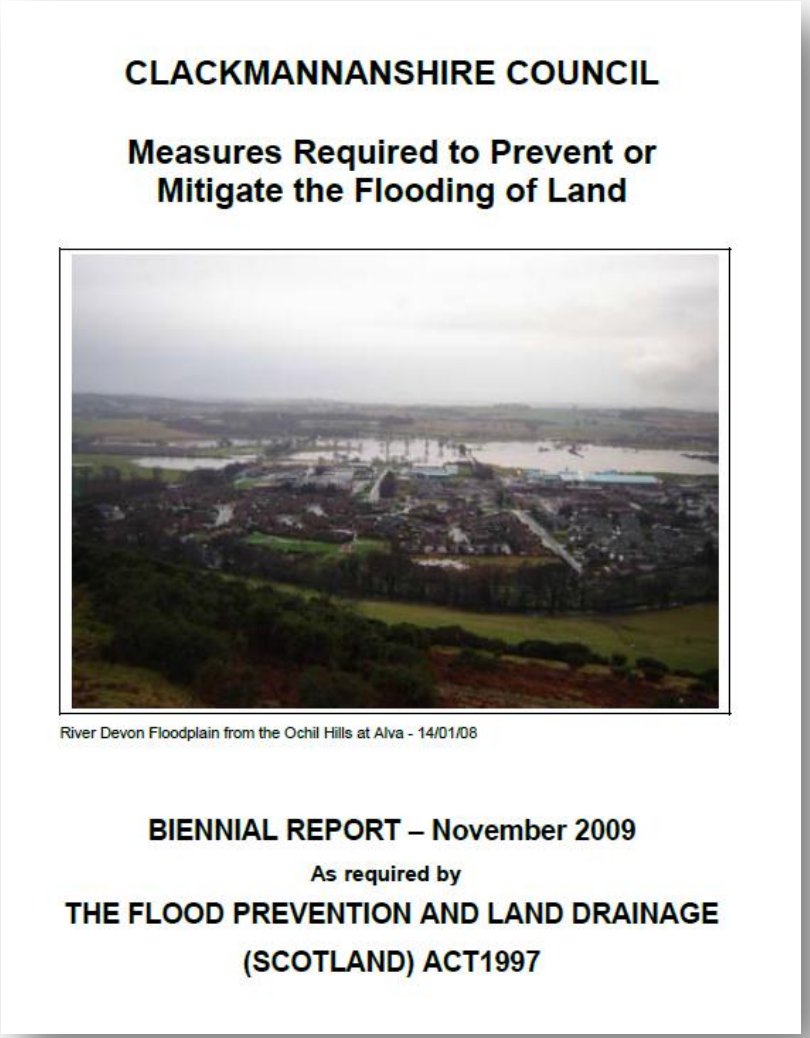
Stuart Cullen - Clackmannanshire Council

Clackmannanshire Council

Background and legislation

- The 1997 act amended 1961 and placed a duty for inspection and maintenance of watercourses
- Biennial reports
- Inspection has in the past been ad hoc
- Need for a risk based approach to inspection



CLACKMANNANSHIRE COUNCIL

Measures Required to Prevent or Mitigate the Flooding of Land

River Devon Floodplain from the Ochil Hills at Alva - 14/01/08

BIENNIAL REPORT – November 2009

As required by

THE FLOOD PREVENTION AND LAND DRAINAGE (SCOTLAND) ACT1997

Watercourse Inspection and Maintenance

- History of watercourse inspection
- Flood Risk Management Act 2009
- Watercourse inspection elsewhere
- Asset Management
- Clackmannanshire Council case study
- Benefits of the system
- Future aspects and the way forward

FRM (Scotland) Act 2009

- Place a duty on every local authority must, from time to time (or when directed to so by the Scottish Ministers) –
  - a) assess the relevant bodies of water (other than canals) in its area for the purpose of ascertaining whether the condition of any such body of water gives risk to a risk of flooding of land within or outwith its area, and
  - b) where:
    - **a body of water gives rise to such a risk, and**
    - **the authority considers that clearance and repair works would substantially reduce that risk**

FRM (Scotland) Act 2009

- Prepare a schedule of those clearance and repair works (Sect 18(1))
- Duty to record and produce a schedule
  - Risk based approach
  - The act also insists on maintaining water courses
- Identify all types of bodies of water that may pose a risk of flooding

Approach to risk based inspection

- Proactive and regular inspection
- Assessment of probability and consequence
  - Condition, known issues, external factors
- Consequence of flooding (links with nFRA, hazard and risk maps and EU Floods Directive)
  - Human health
  - Economic activity
  - Environment
  - Cultural heritage

Inspection frequency in months

Consequence of failure within the reach	Low	Medium	High
High	24	12	6
Medium	36	24	6
Low	60	36	18

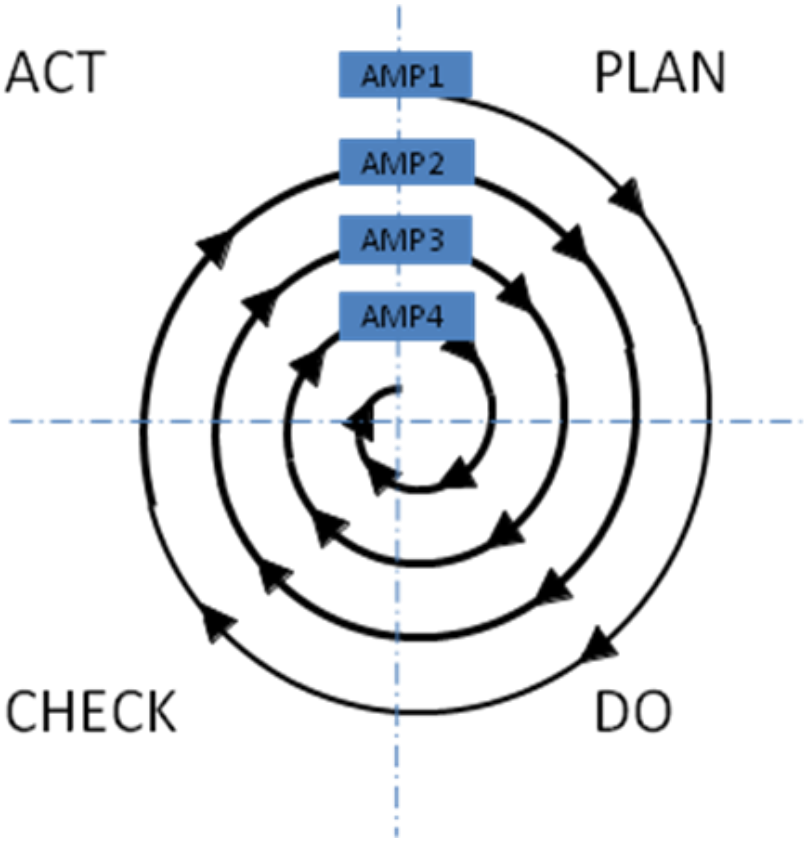
Probability of failure within the reach

Source: Environment Agency

Steps toward Asset management

Deliverables

- Plan – establish strategy and objectives
- Do – establish requirements and develop database
- Check – monitor and measure results
- Act – take actions to ensure objectives are achieved



Risk and asset management

Often used by bodies where:-

- Reliance on infrastructure assets to achieve policy & objectives and deliver quality service to communities
- Reliability, availability, maintenance and safety are core business objectives
- Necessity to secure long-term funding / resources to manage
- Demonstrate economic / effective use of funds
- Requirement to reduce resources without detriment to asset stewardship or an increase in overall business risk

2004 – 2007 - 2009

Rational for adoption of asset management

- Routine maintenance reduces the rate of deterioration
- Unrealistic to maintain and replace all assets at once, hence need to prioritise improvements
- Reduce capital expenditure by optimising expenditure over the life of an asset
- Presents a positive impression of asset ownership
- Risk based methodology – managing the risk not resources
- Focus resources where benefit is greatest for least cost
- Holistic approach not demand driven

Clackmannanshire Council – case study

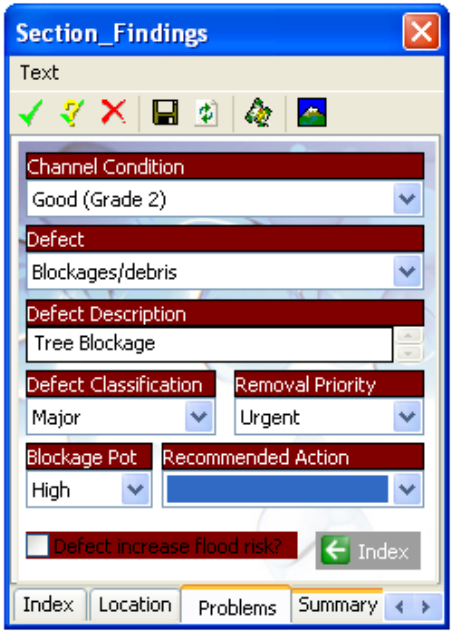
- Proactive approach to watercourse inspection and maintenance
- Standardisation of process and reporting required
- Efficiency of data collation required

Scope

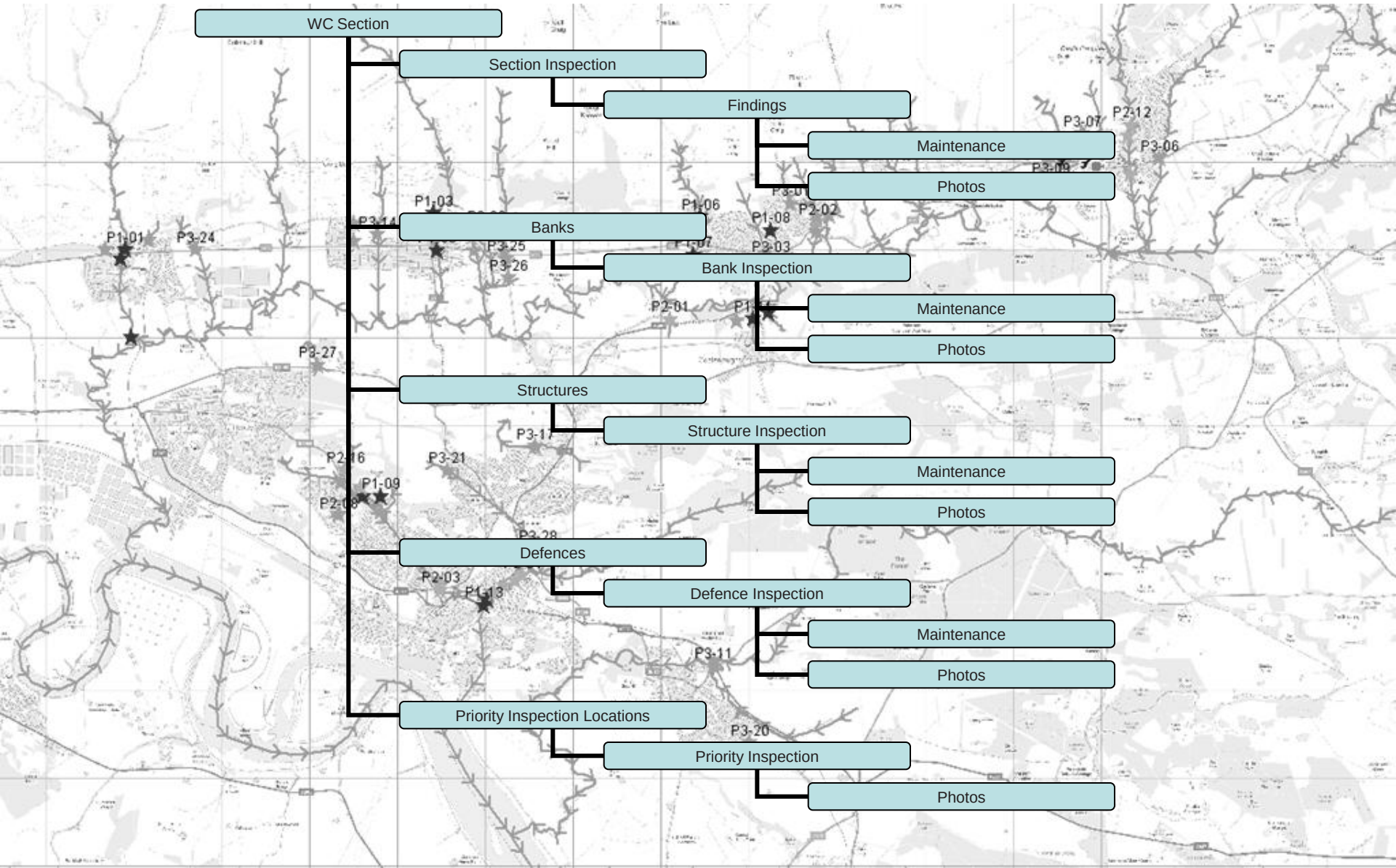
- Basic inventory of watercourses and associated assets
- Describe, log and update dataset
  - Recording of planned activities
  - Recording of works undertaken
  - Reporting of activities
- Based on existing watercourse reference system
- To use existing hand-held on-site device

Based on J|Gismo system

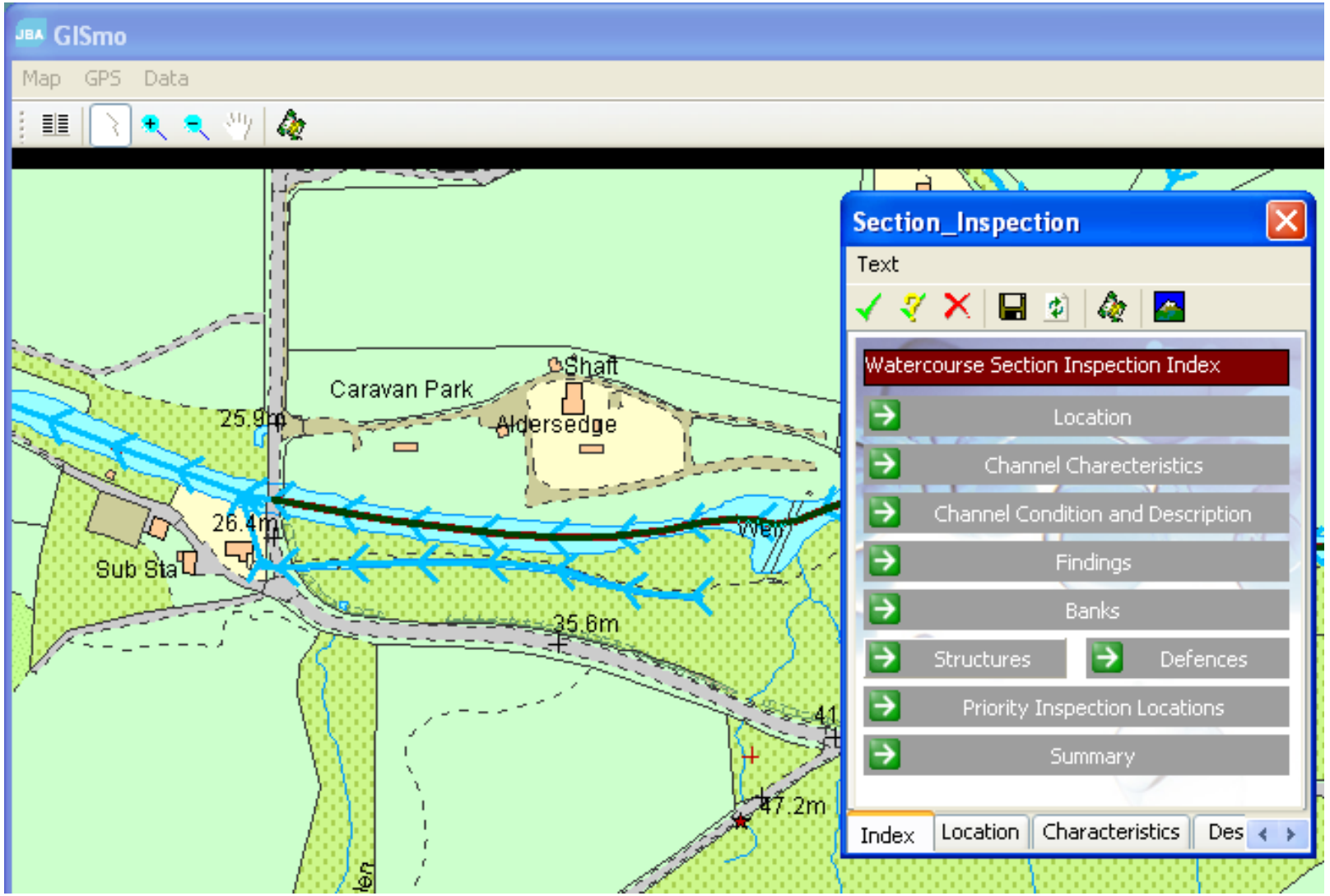
- Proven and widely used for IDB and Network rail
- Mobile GIS system
- GIS application for Windows/Mobile
- Integrates with GPS and camera
- Site based data collection
- Custom data entry forms
- Quick and easy entry of data



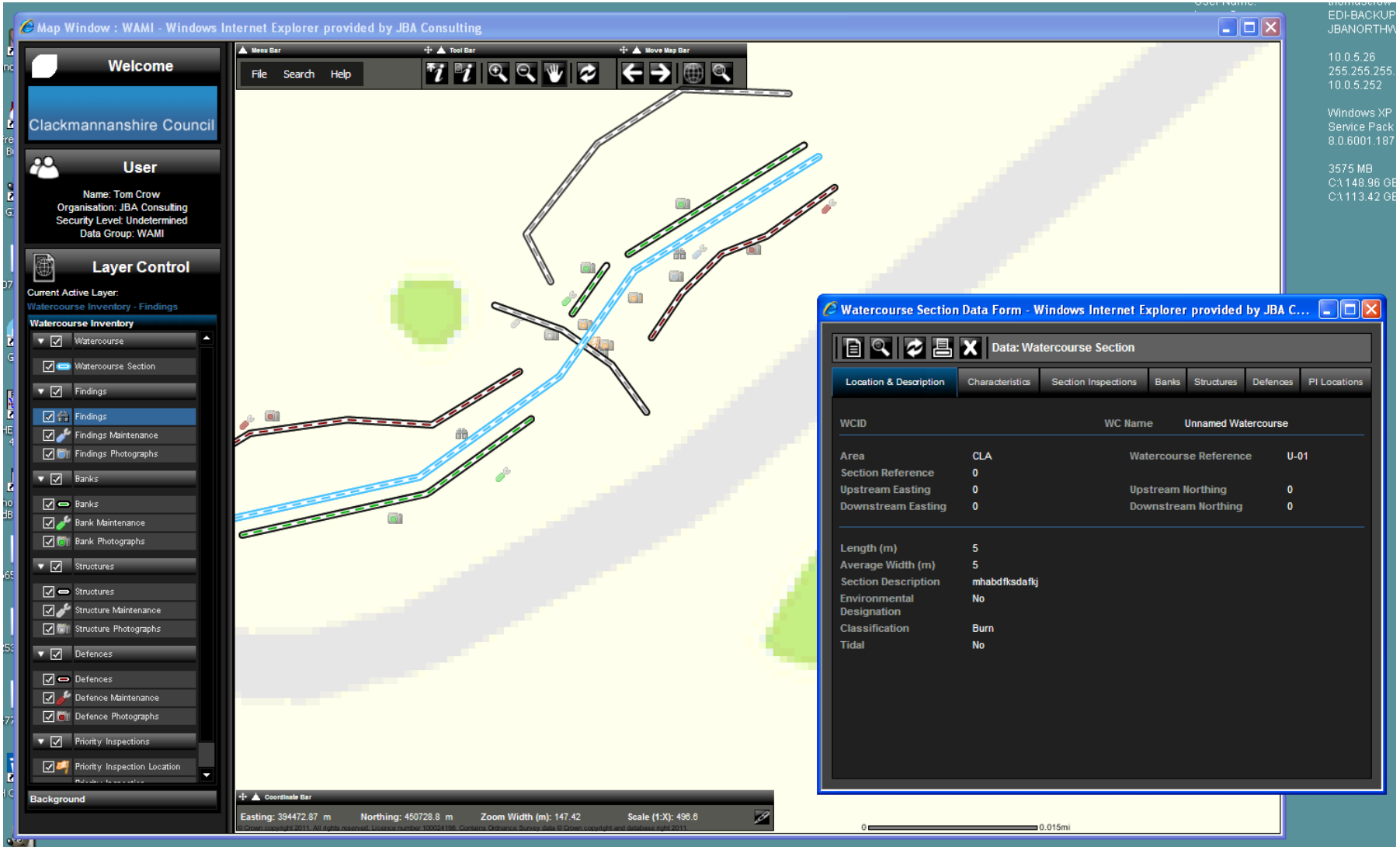
Data Collection Framework



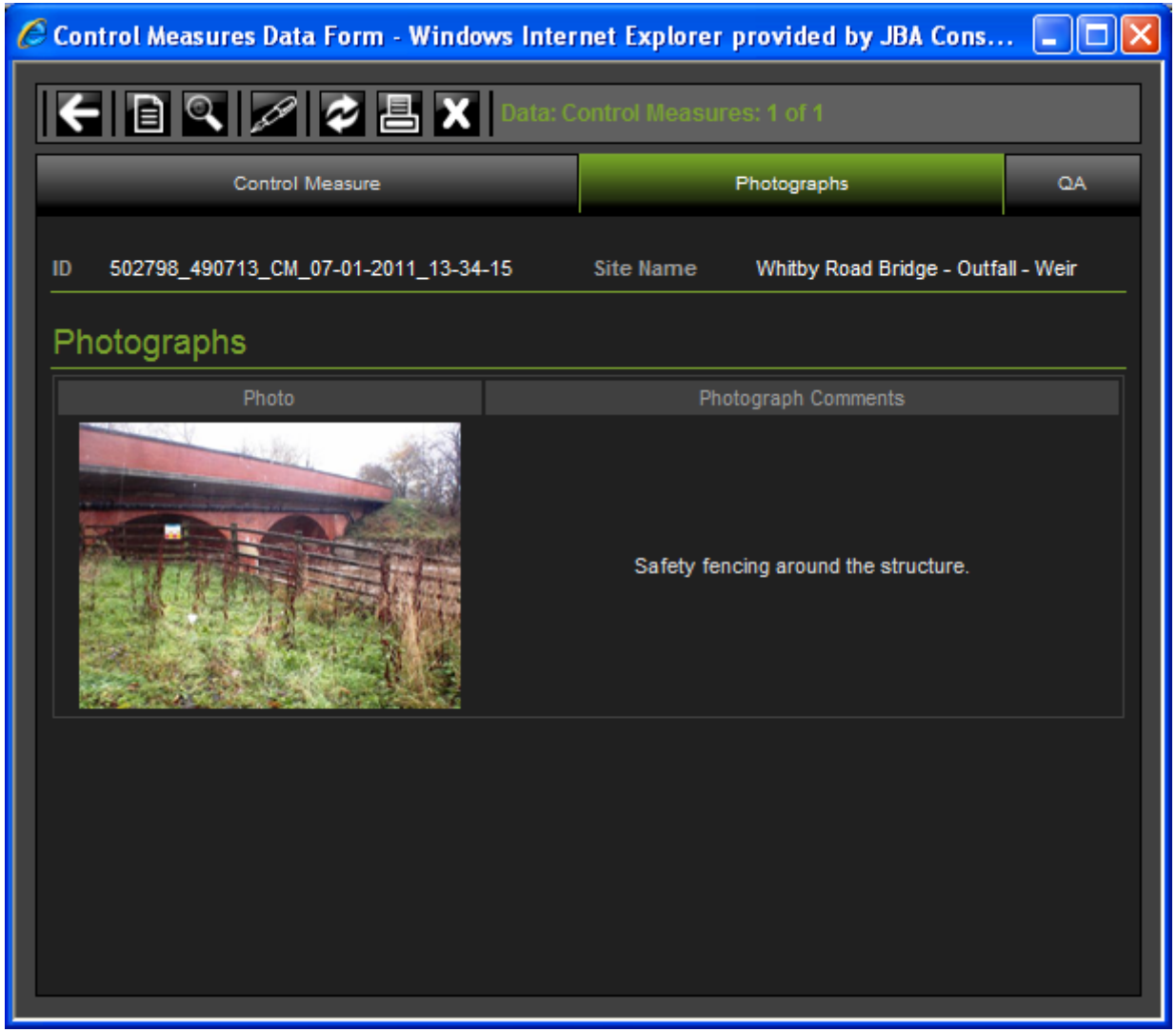
Example of on-site data entry form



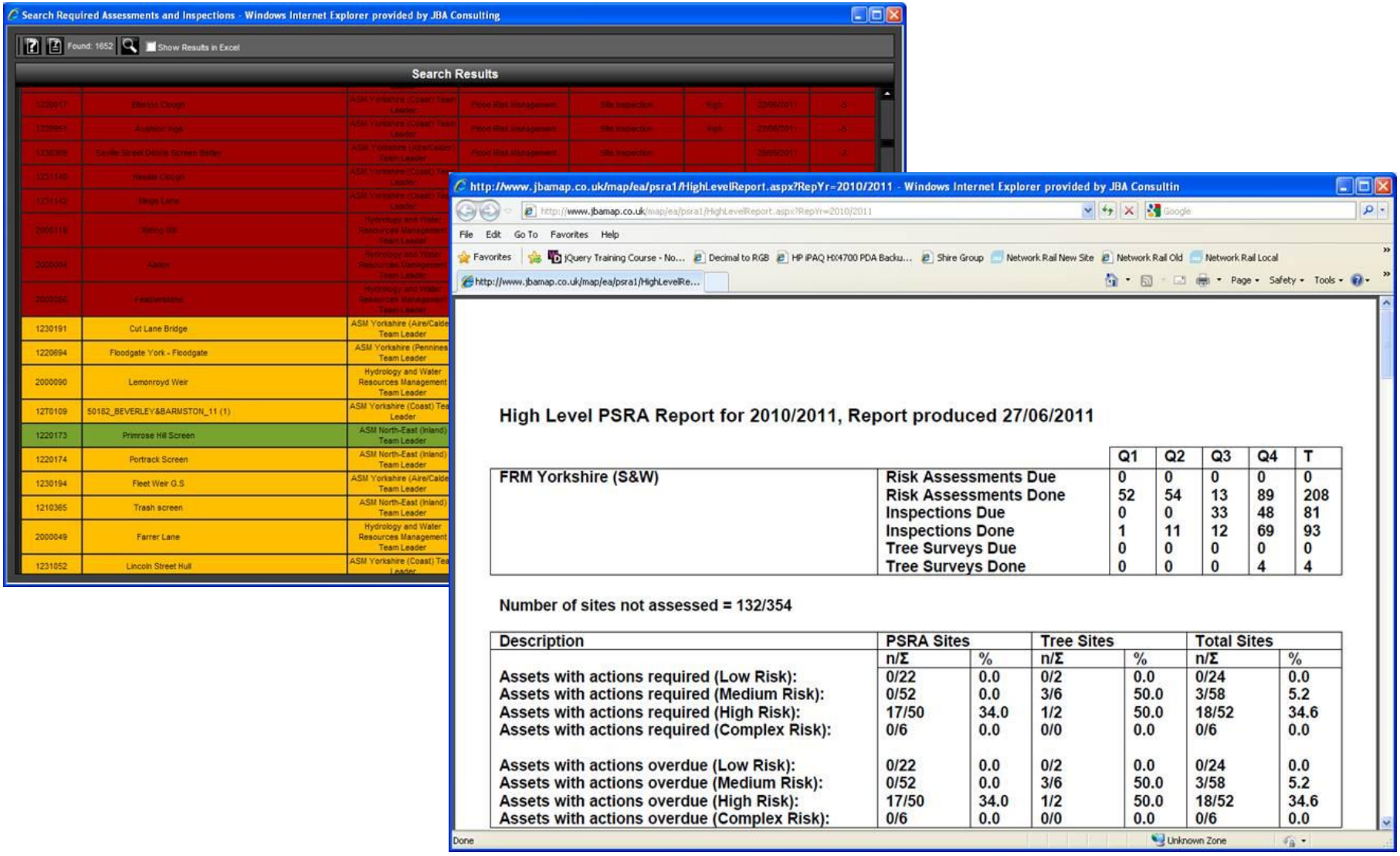
Website


Map Window : WAMI - Windows Internet Explorer provided by JBA Consulting
Welcome
Clackmannanshire Council
User
Name: Tom Crow
Organisation: JBA Consulting
Security Level: Undetermined
Data Group: WAMI
Layer Control
Current Active Layer:
Watercourse Inventory - Findings
Watercourse Inventory
Watercourse
Watercourse Section
Findings
Findings
Findings Maintenance
Findings Photographs
Banks
Banks
Bank Maintenance
Bank Photographs
Structures
Structures
Structure Maintenance
Structure Photographs
Defences
Defences
Defence Maintenance
Defence Photographs
Priority Inspections
Priority Inspection Location
Background
File
Search
Help
Easting: 394472.87 m
Northing: 450728.8 m
Zoom Width (m): 147.42
Scale (1:X): 496.6
Watercourse Section Data Form - Windows Internet Explorer provided by JBA C...
Data: Watercourse Section
Location & Description
Characteristics
Section Inspections
Banks
Structures
Defences
PI Locations
WCID
WC Name
Unnamed Watercourse
Area
CLA
Watercourse Reference
U-01
Section Reference
0
Upstream Easting
0
Upstream Northing
0
Downstream Easting
0
Downstream Northing
0
Length (m)
5
Average Width (m)
5
Section Description
mhabdfksdafkj
Environmental Designation
No
Classification
Burn
Tidal
No

Inspection Photos



Bespoke reporting



High Level PSRA Report for 2010/2011, Report produced 27/06/2011

		Q1	Q2	Q3	Q4	T
FRM Yorkshire (S&W)	Risk Assessments Due	0	0	0	0	0
	Risk Assessments Done	52	54	13	89	208
	Inspections Due	0	0	33	48	81
	Inspections Done	1	11	12	69	93
	Tree Surveys Due	0	0	0	0	0
	Tree Surveys Done	0	0	0	4	4

Number of sites not assessed = 132/354

Description	PSRA Sites		Tree Sites		Total Sites	
	n/Σ	%	n/Σ	%	n/Σ	%
Assets with actions required (Low Risk):	0/22	0.0	0/2	0.0	0/24	0.0
Assets with actions required (Medium Risk):	0/52	0.0	3/6	50.0	3/58	5.2
Assets with actions required (High Risk):	17/50	34.0	1/2	50.0	18/52	34.6
Assets with actions required (Complex Risk):	0/6	0.0	0/0	0.0	0/6	0.0
Assets with actions overdue (Low Risk):	0/22	0.0	0/2	0.0	0/24	0.0
Assets with actions overdue (Medium Risk):	0/52	0.0	3/6	50.0	3/58	5.2
Assets with actions overdue (High Risk):	17/50	34.0	1/2	50.0	18/52	34.6
Assets with actions overdue (Complex Risk):	0/6	0.0	0/0	0.0	0/6	0.0

Benefits of the system

- Onsite data collection
- Location based
- Data storage
- Web based data review
- Adaptable and bespoke data forms and reporting
- Expandable to other asset data collection

Future improvements

- Culverted watercourse included where known
- Drainage aspects- important for surface water flooding
- Onsite display of previous related events or issues
- Integration of existing structural records such as “Burns crossing register” or SuDS register
- Historical records
- Prioritisation on risk awaiting national guidance on risk
- NFM

Summary

- Integration into local and river basin management planning
- Forward integration of national database?
- Feed into local plans to prioritise works
- Multi criteria analysis of work
- Integration with SW, Network Rail,Forestry

Consultants of the Year 2010
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Winner

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Thank you & questions

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Clackmannanshire Council