Thames Tideway Tunnel
GIS: centralise, extend, enable and exploit information integration
Why London needs the Thames Tunnel

- **39 million m³ (10.3 billion gallons):** of combined sewage discharged to tidal River Thames in a typical year

- **50-60:** CSO discharges in a typical year

- **Environmental:** tides mean the sewage pollution and effects remain in the river for weeks, affecting dissolved oxygen, ecological health and habitats

- **Human:** frequency of CSO discharges is a health threat to river users who recreate on the river and walk along the foreshore

- **Legal:**
  - the UK fails to comply with the EU Urban Waste Water Treatment Directive
  - the Tidal Thames does not meet the UK Water Framework Directive Requirements
Problem / Solution Overview
London Tideway Improvements

- Sewage Works Upgrades - £675m
- Lee Tunnel - £635m
- Proposed Thames Tunnel - £4.1bn
The Thames Tunnel

- Through central London, broadly following path of river. Flows to transfer to Beckton STW.
- Major shaft sites for construction of tunnel and CSO connections to capture discharges.
- Construction scheduled to start 2016, for completion in late 2023.
Meeting the challenges

- Use the existing sewer network to best advantage
- Maximise use of the river alignment for the main tunnel.
- Significant use of river for movement of construction materials.
- Provide mechanical ventilation to keep tunnel environment fresh (99.5% air released to be treated).
- Vertical alignment to minimise impact on existing infrastructure.
Third Party Infrastructure affected by project

- **Tunnels**: 45
- **River Walls** = approx 20km
- **Bridges**: 67
- **Utilities**:
  - Gas mains: ~34km
  - Water mains = ~15km
  - Sewers: ~18km
  - Others include electricity and communications cables
- **In-river structures**: 50
- **Buildings**: 1,986 within 1mm settlement contour including 30 listed buildings
Major Infrastructure Project

- A very complex & large engineering project for a GIS to support.
Primary role of GIS in Thames Tunnel is to support ‘informed’ decision making
Many Stakeholders requiring Access to Information
Many sources of data

- Historic mapping
- Land use
- Physical Map/Drawings
- Photo's
- Survey Data
- As Built Drawings
- Social networks
- Property info
GIS Deliverables

- Analysis
- GIS web apps
- Mobile apps
- Data Management
- Trust in data integrity
- Information
- Data translation
- 1000 data layers
- 35 000 maps
- Information Quality
- 200 Gb Data
- 200+ contractors
- 220+ data requests
- Visualisation
- 1000 data layers
- 35 000 maps
- Information Quality
- 200 Gb Data
- 200+ contractors
Land Use Classification

From this...

To this...

Without this...
Real time integrated information access
Benefits

- Data Capture
  - Time saved on digitising and reworking
  - Data ownership and responsibility
- Improved ‘informed’ decision making
  - Access to information in real time
  - Field validation done in real time
- COTS Solution
  - nil development required
Challenges

- Authoring of maps
  - Use ArcGIS.com rather than AGS Mobile Content Server

- ArcGIS for smartphone applications (Android & iOS)
  - Secured services initially not supported
  - Limited configuration
    - Limited map canvas configuration
    - Identify tool (WGS Coordinates)
The Future

- Increased in mobile GIS
- Modular rather than holistic web viewers
  - Targeted at specific business requirements (workflows)
  - More ‘editing’ viewers
  - HTML5 Viewers
- Supporting BIM strategy
- Greater System Integration
For more information

http://www.thamestunnelconsultation.co.uk/
Thank You

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