GS7083: Heathrow Airport: The A-Z of Airport Views

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Class summary

This class looks at the solutions, products, and workflows which enable critical business decisions to be made using real-time information.

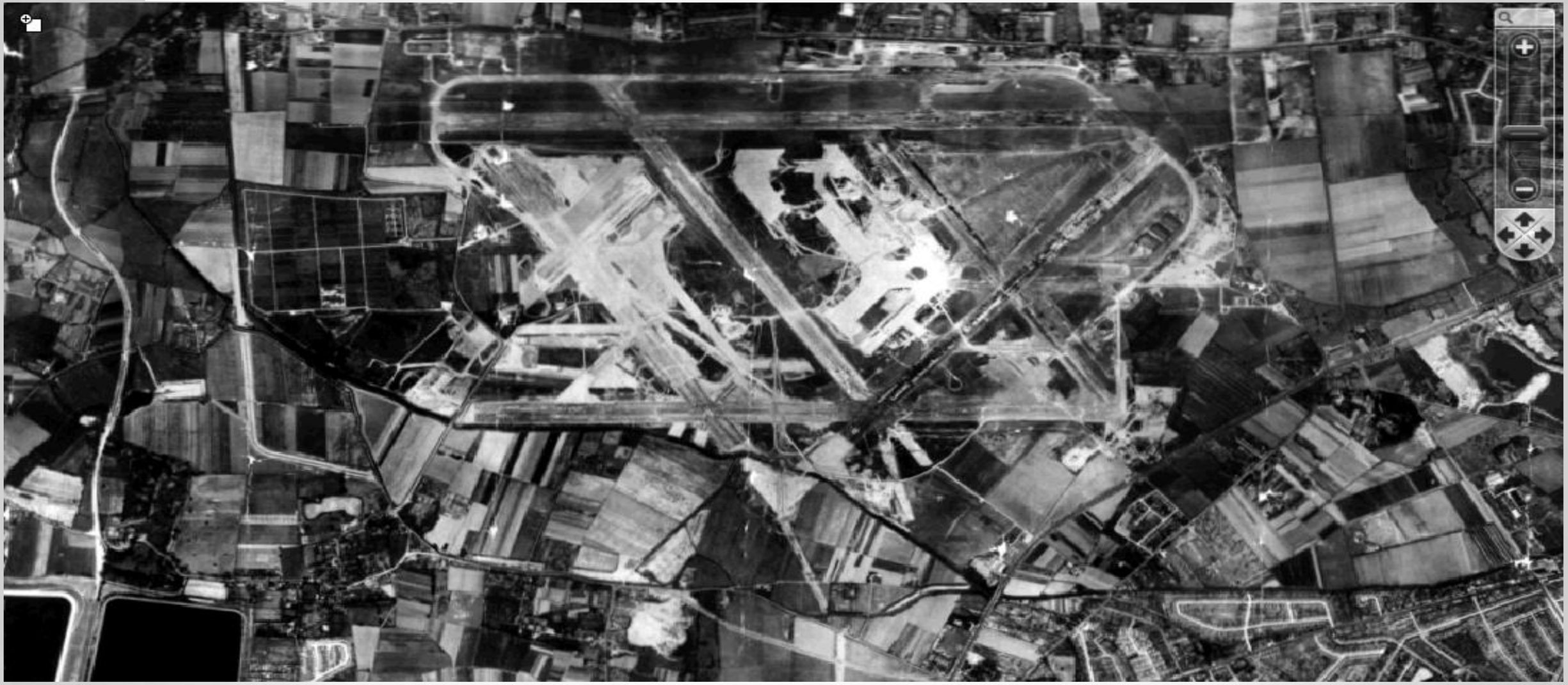
Key learning objectives

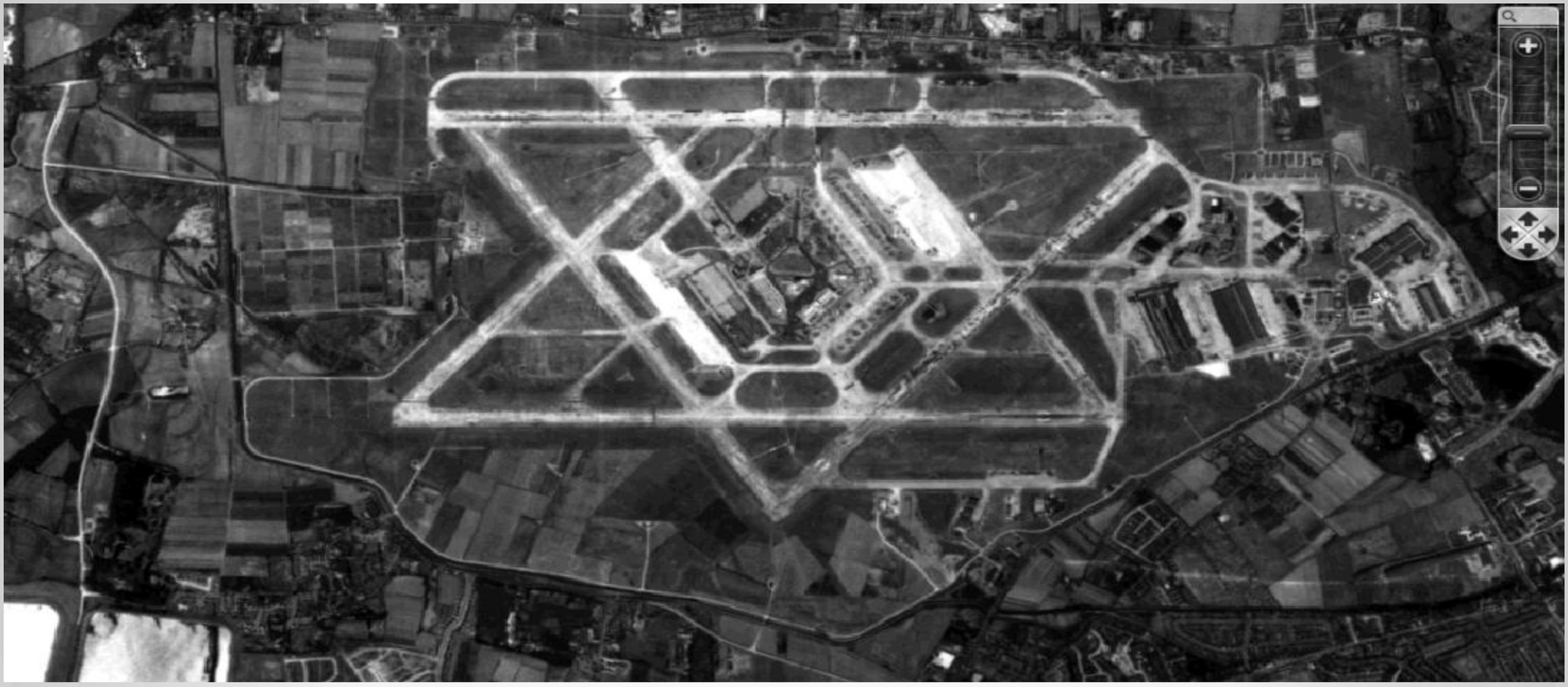
At the end of this class, you will be able to:

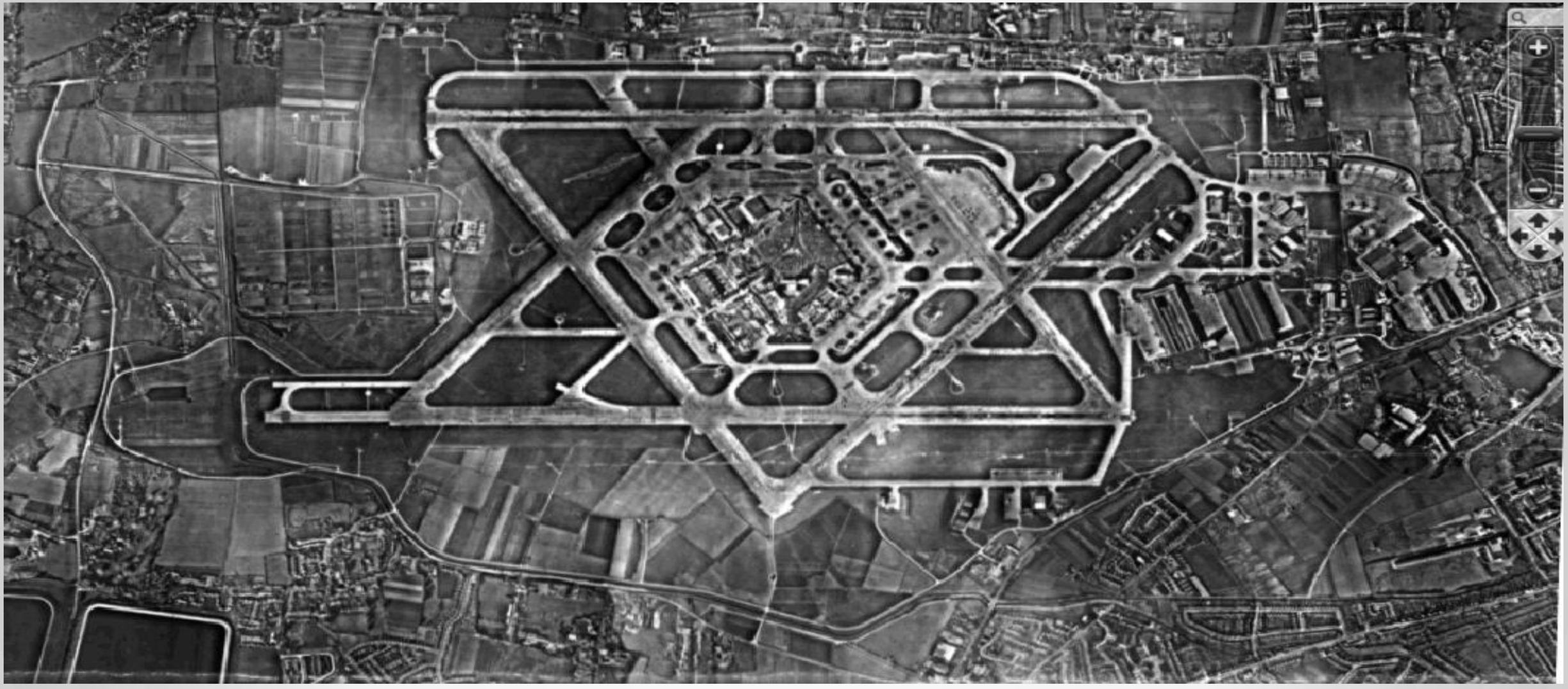
- Learn about the Various Views of Heathrow and how they address key business needs
- Discover the solutions, products and workflows at a large airport for infrastructure and asset management information
- Learn about the multiple Integrations within AIMS / Oracle
- Demonstrate the possibilities of Flexible Layouts

Heathrow Airport

Changing Heathrow








Cambridge Science Park

Heathrow Today

The Vision

Welcome to Heathrow – A complex city

- **70** million passengers each year – **185,000** every day
- **476,000** flights per year – **86** airlines, **183** destinations
- **2** runways – operating at 99% capacity

- **76,000** people work at Heathrow
- **100,000** additional local jobs are created by Heathrow
- **323** companies work at Heathrow
- **2000** retail outlets

We all see our assets from different perspectives and have different questions to answer

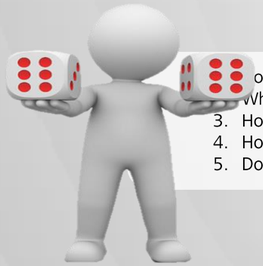
1. How much money do we need to invest in our assets to deliver the required level of performance?
2. If we don't invest as planned what are the consequences likely to be?
How can we demonstrate to the shareholder and regulator that every £ invested in this escalator is delivering a benefit?
Can we evidence compliance with our legal obligations?
If I have one pound to spend should I spend it on this escalator or somewhere else?

1. Where is the asset?
2. What parts do I need?
3. What tools do I need?
4. Is there a method statement?
5. Are there drawings/schematics?

1. Does the escalator do what it was intended to do?
2. How often does it break down or fail to meet the required performance level?
3. What is the engineering life of this asset?
4. Is it more cost effective to extend the life of this asset rather than replacing it?
5. What is the best maintenance strategy?
6. What competencies are required to maintain this?

1. How many safety incidents have we had relating to this escalator?
2. Do we have the same escalator elsewhere?
3. Are there any differences between the same asset in different contexts?
4. If so, what has made the difference?
5. Does this asset contain hazardous materials?
6. If we were buying another one should we buy the same again?

1. How much did this escalator cost to buy?
2. What is the total cost of ownership?
3. What is its current book value?
4. If we replace it before it is depreciated what is the write off value?
5. Is the escalator correctly categorised for Tax?
6. When is the optimum time to replace this asset using whole life cost principles?



1. ow critical is this escalator to the operation of Heathrow?
2. What is the risk if this escalator stops working?
3. How likely is this to happen?
4. How is this risk being mitigated?
5. Do we have a contingency plan for this asset in case the worst happens?

1. How much energy does this escalator use?
2. Is this in line with forecast?
3. What can we do to reduce this and still maintain the required level of performance?

Joining up our data will deliver real business value

Visualise our assets and work orders on a map and use this to inform work allocation and resource planning.

Ensure that our fixed assets register is updated in a timely manner when assets are added/removed.

Provide our engineers with the correct safety data and repair instructions on our assets

Know the current status of an asset and improve our prediction of when it might fail

Allow us to visualise at any one time which permits are active on the airport

Our destination - Informed decisions supported by joined up data which is of a known quality

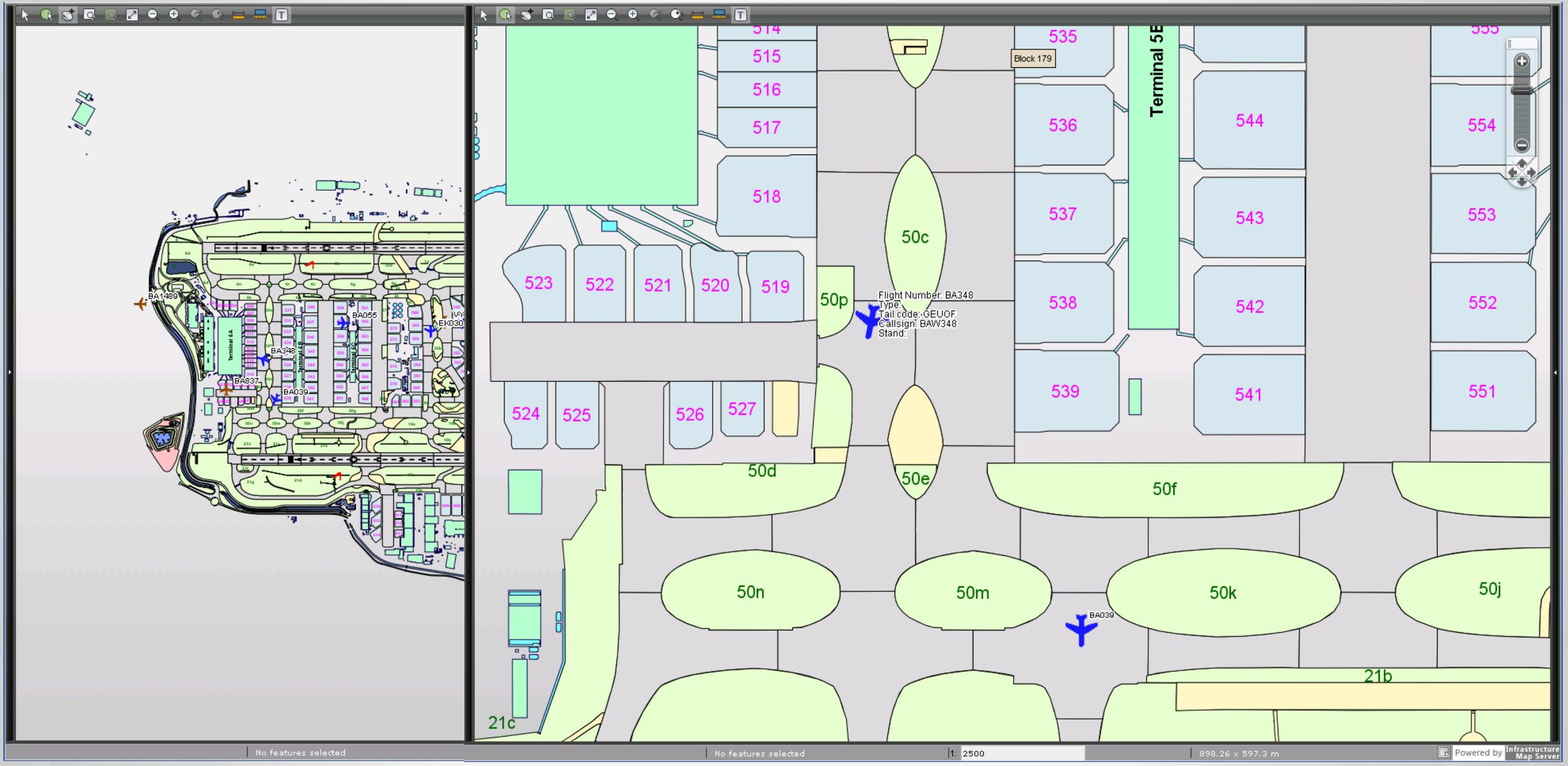
The Views – ACDM

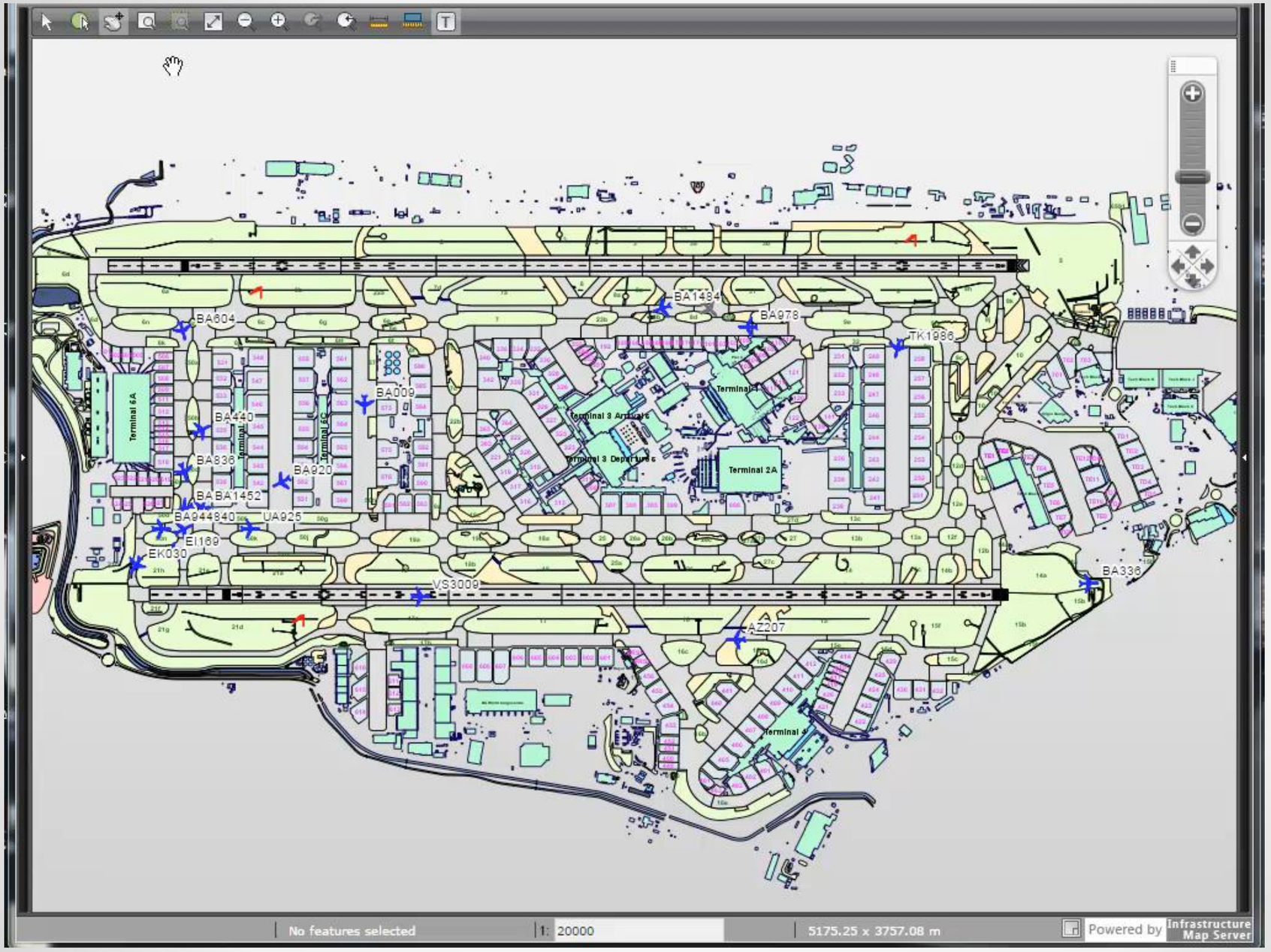
Airport Collaborative Decision Making

- Joint initiative between the airlines, handlers, NATS and Heathrow Airport Limited.
- Facilitate the sharing of operational processes and data to allow better informed decisions to be made.

Implementation at other major European Airports have shown improvements in stand and gate management, resource management, slot adherence leading to reduced costs for all parties and improved accuracy of passenger information

The Views – ACDM

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EI169
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VS3009
AZ207
BA336
Terminal 6A
Terminal 6B
Terminal 6C
Terminal 3 Arrivals
Terminal 3 Departures
Terminal 2A
Terminal 4
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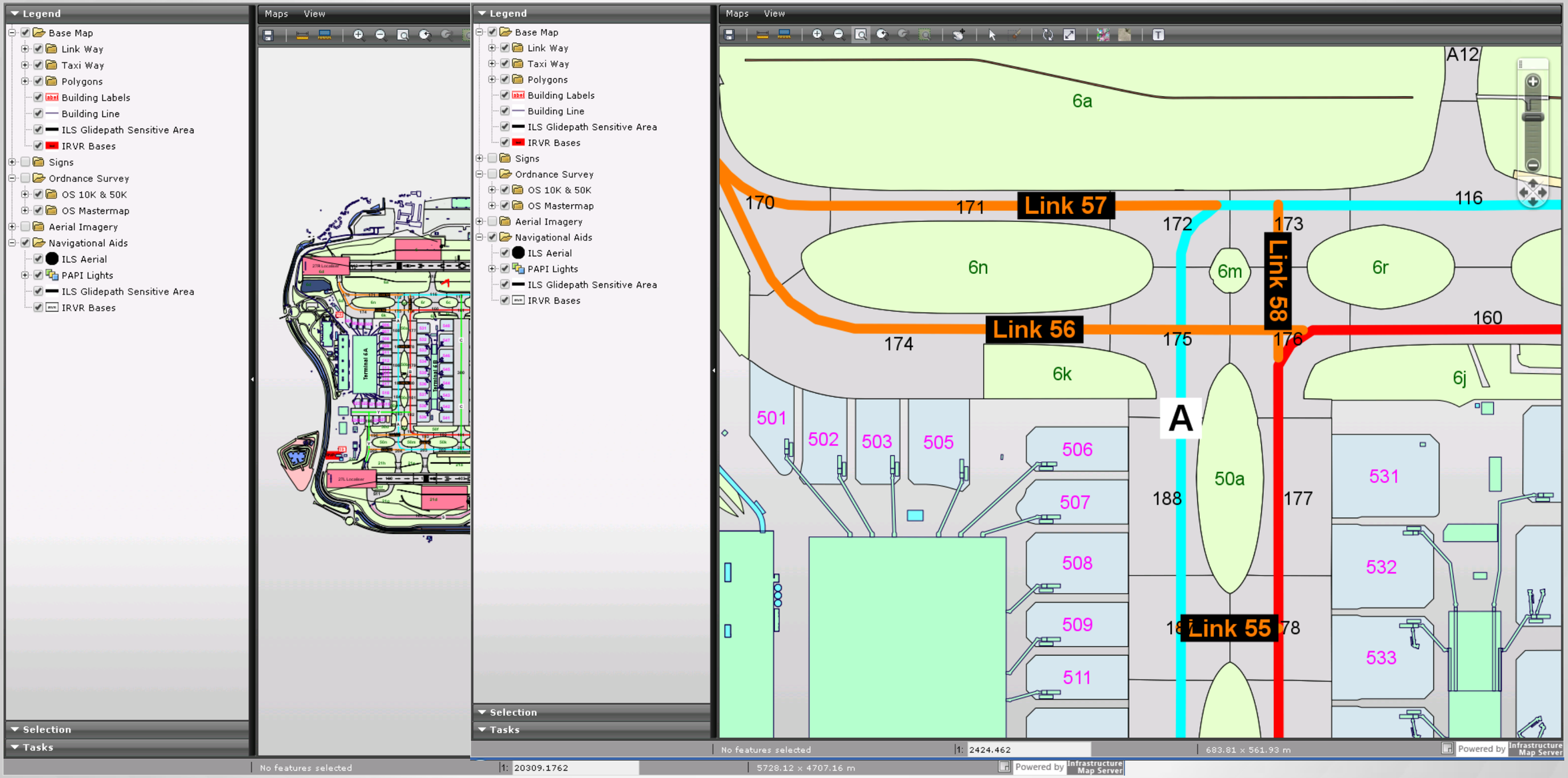
1: 20000
5175.25 x 3757.08 m
Powered by Infrastructure Map Server

The Views - Airfield Map

- Simplified view of the airfield showing the primary Taxi Way, Linkways and Navigational Aids
- Used internally by operations and externally by the Airlines and other third parties.

The Views - Airfield Map



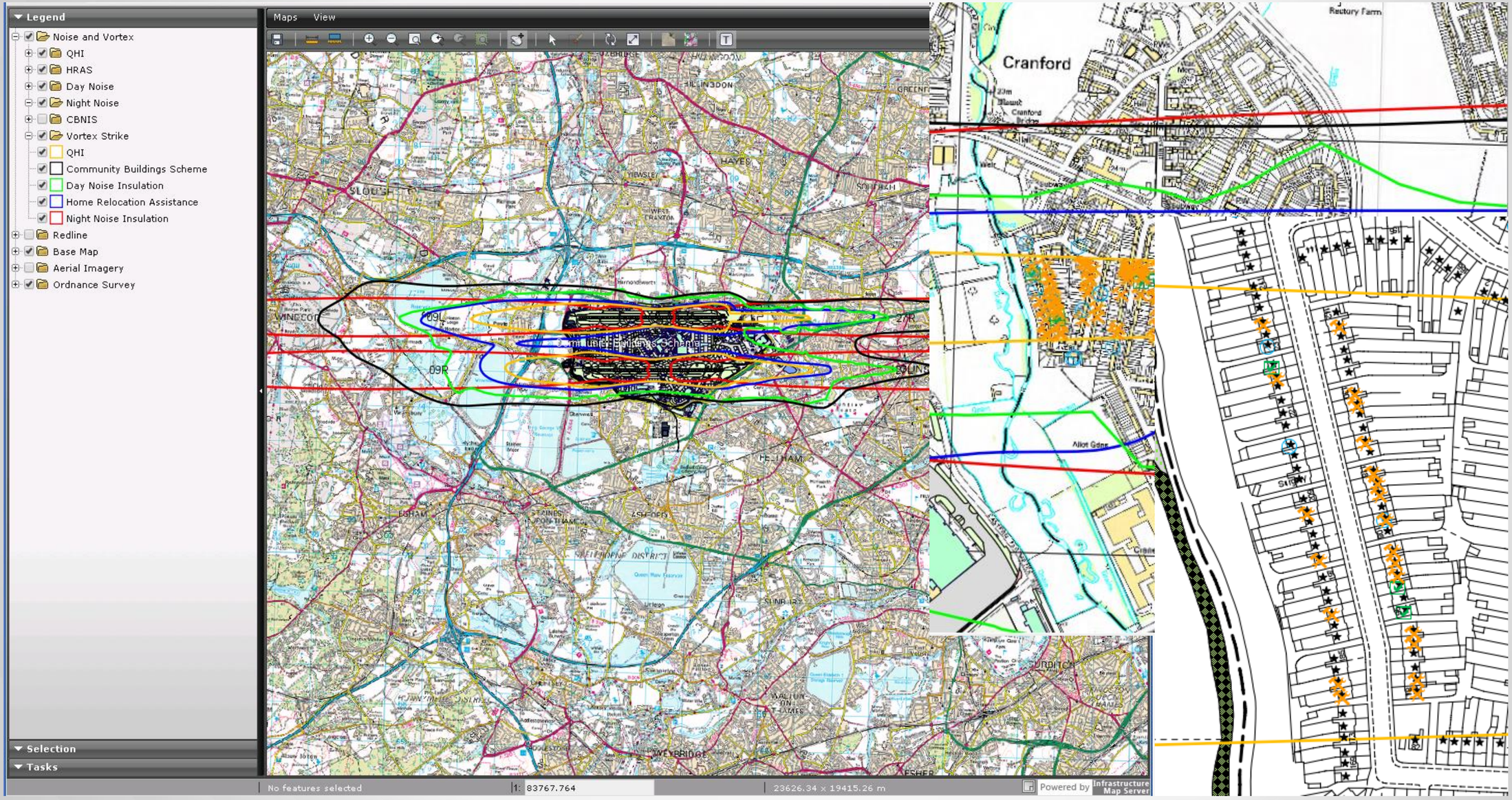
The Views – Community Relations

Strategic Intent

To limit aircraft noise impacts and gain the trust of our stakeholders that we are using best practicable means to achieve this goal, and to continue this approach into the future, within the framework established by government.

- Mitigating noise and land use. Effective noise insulation schemes and influencing planning to minimize the number of noise-sensitive properties around the airport.
- Working with local communities.
- Reflecting the community's concerns in our noise strategies and communications.

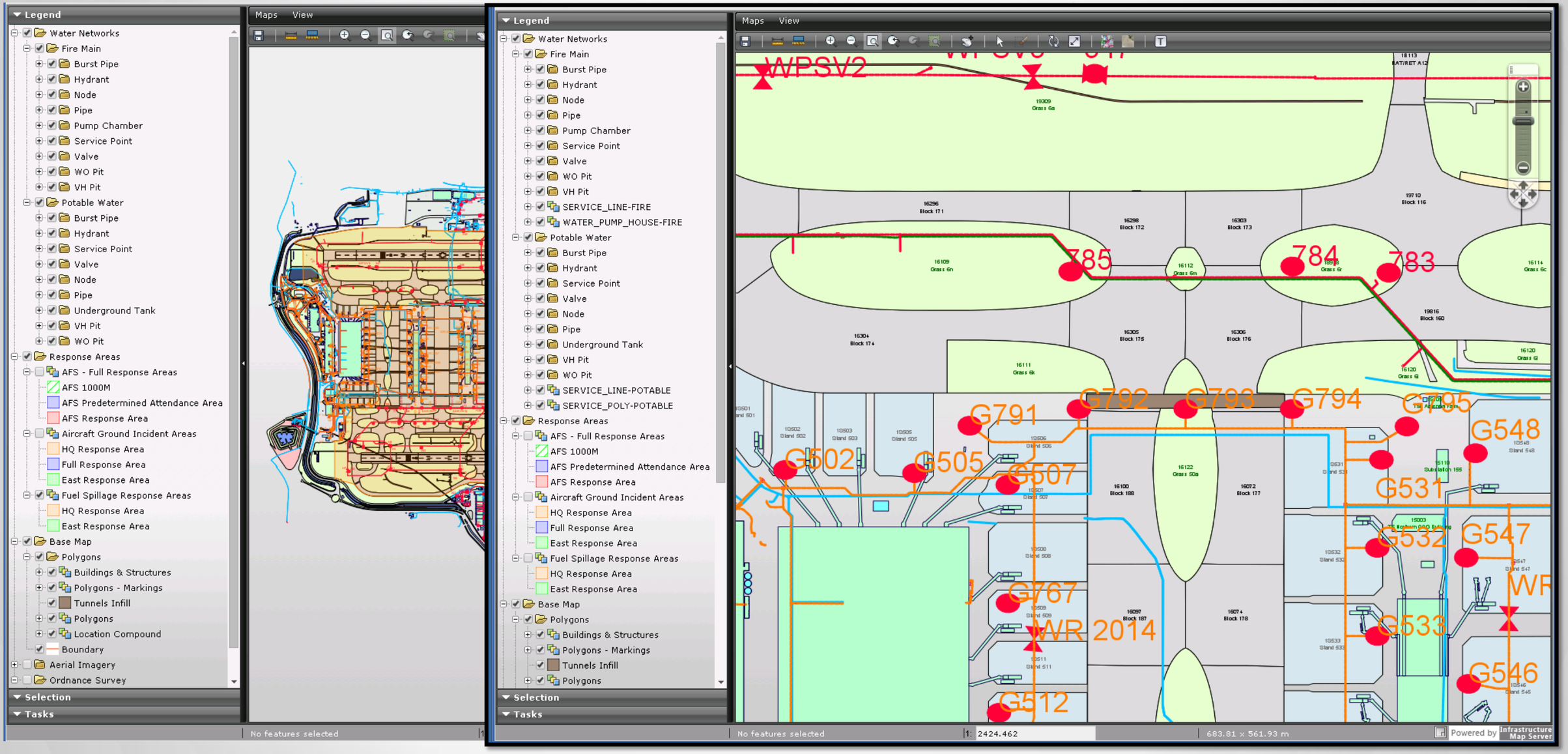
The Views – Community Relations



The Views – Fire Services

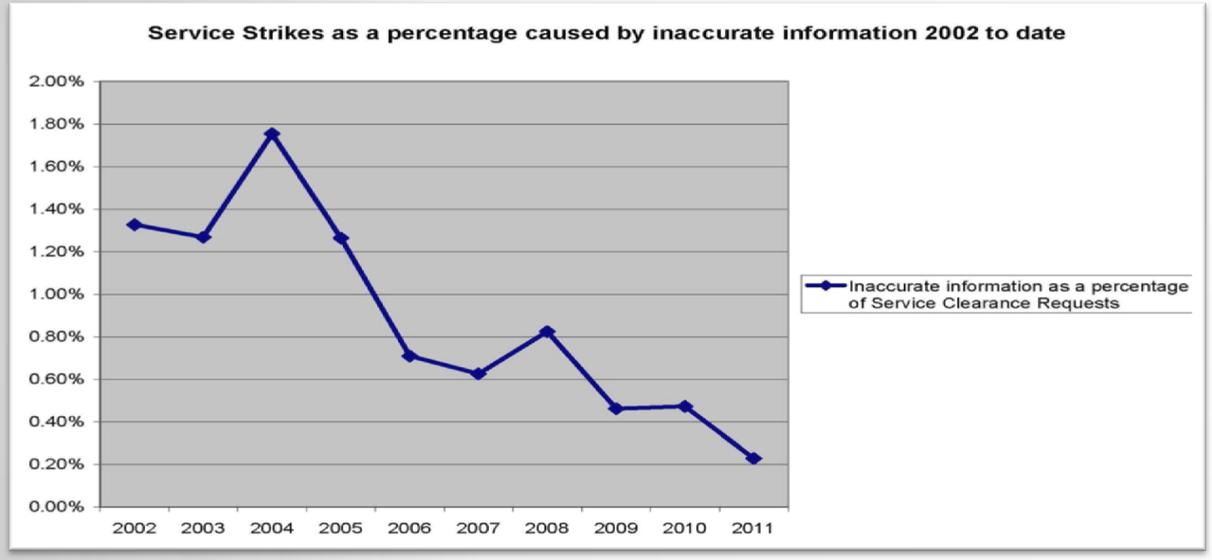
- Response teams can easily identify responsibility for type of incident
- Location of water systems and Hydrant references

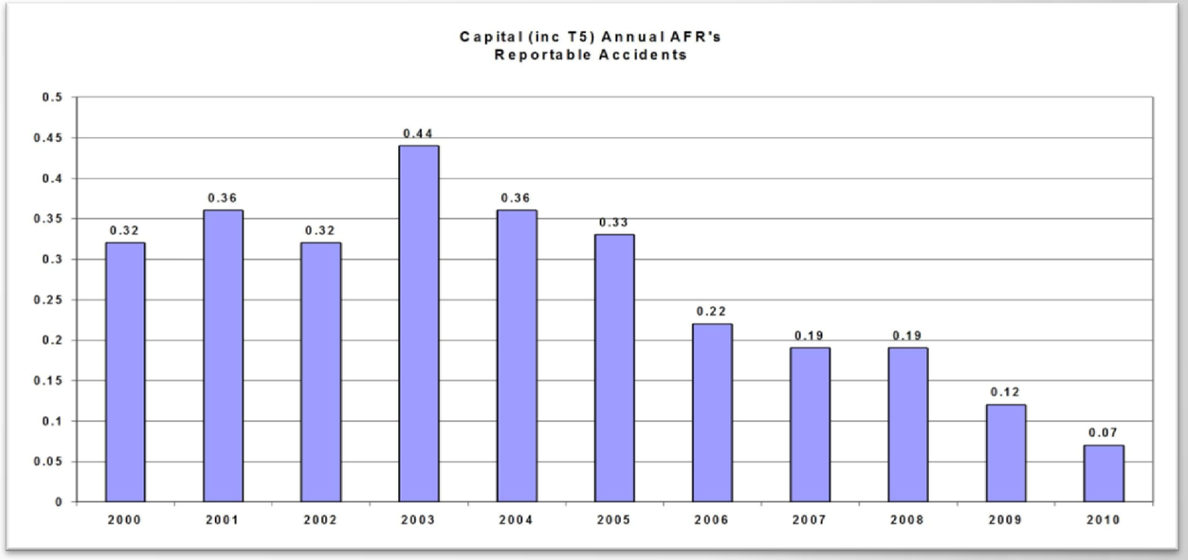
The Views – Fire Services



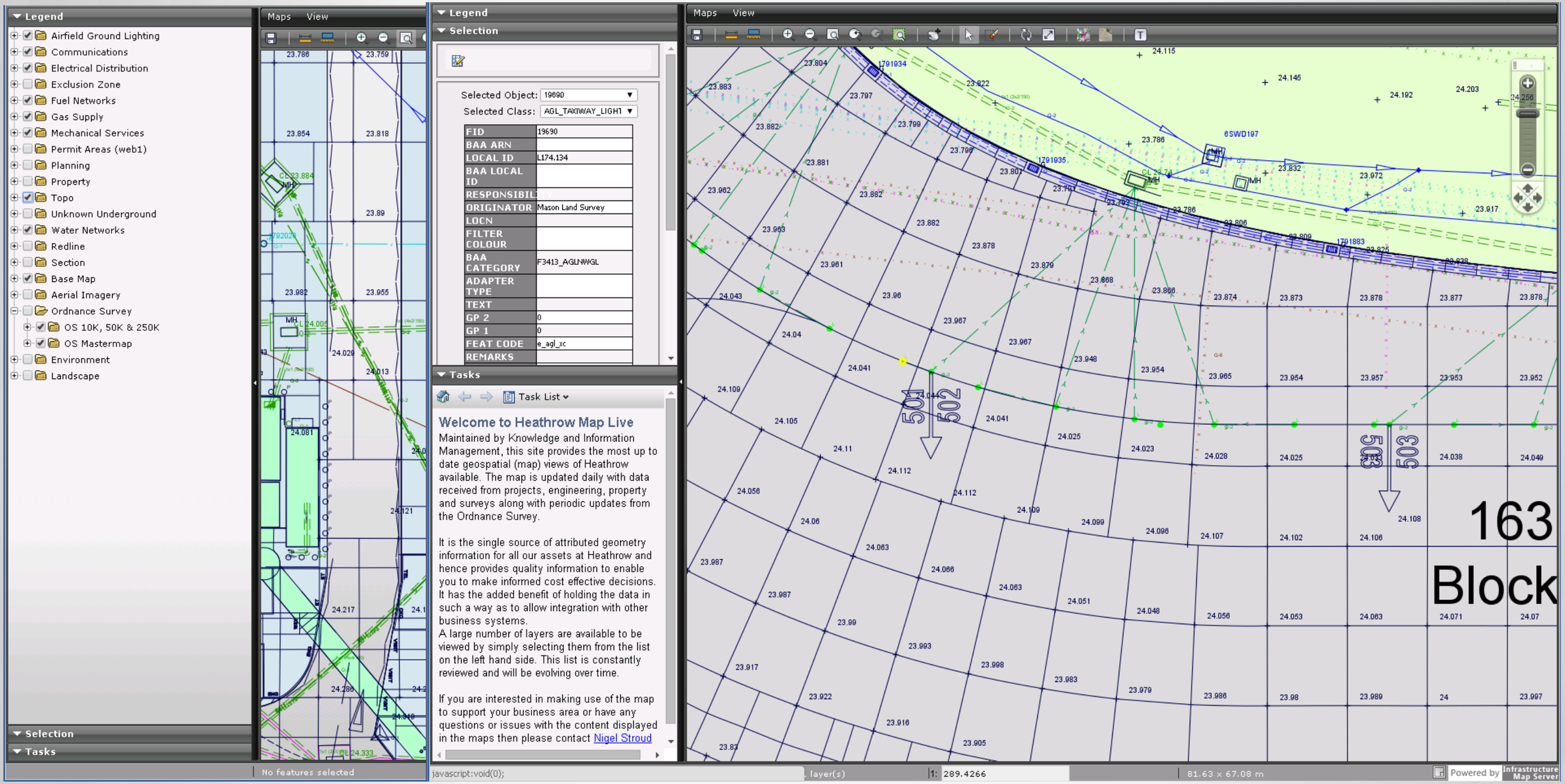
The Views – Engineering Services

- Providing a single source of Engineering information about our Airfield services and infrastructure
- Provide accurate information for constructions teams delivering new assets

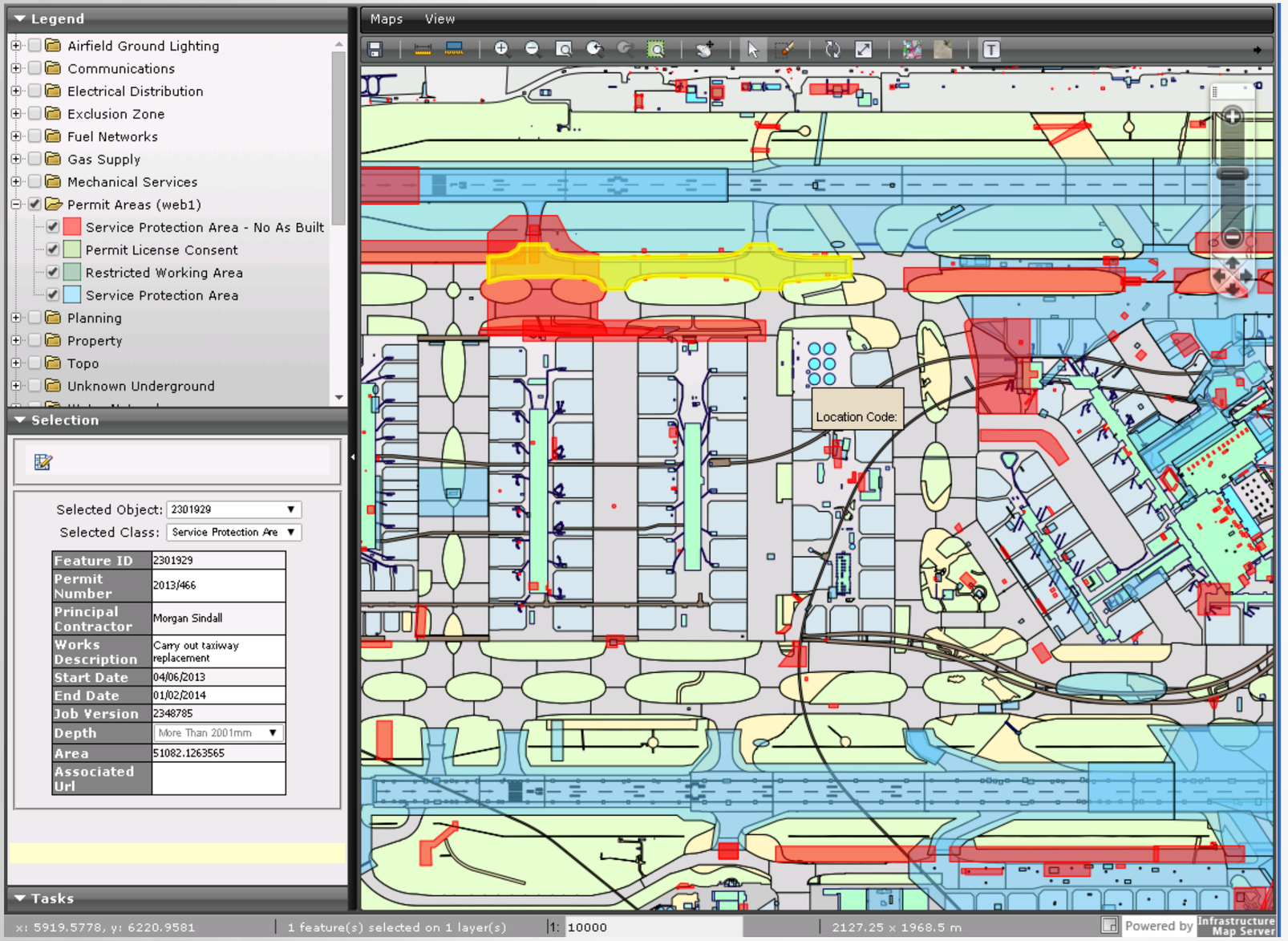


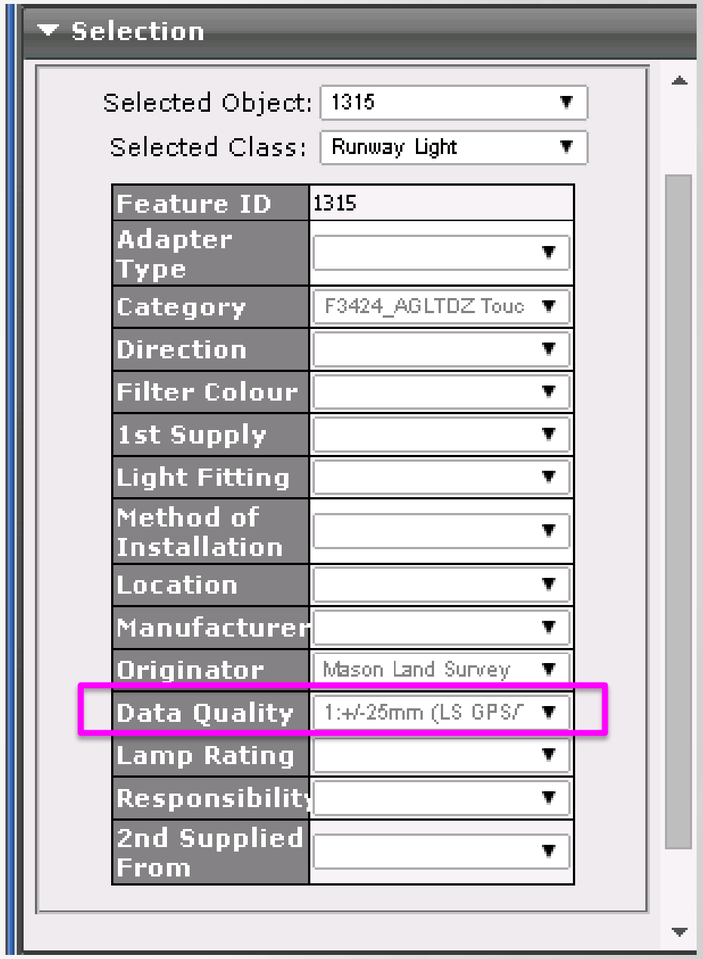


The Views – Engineering Services

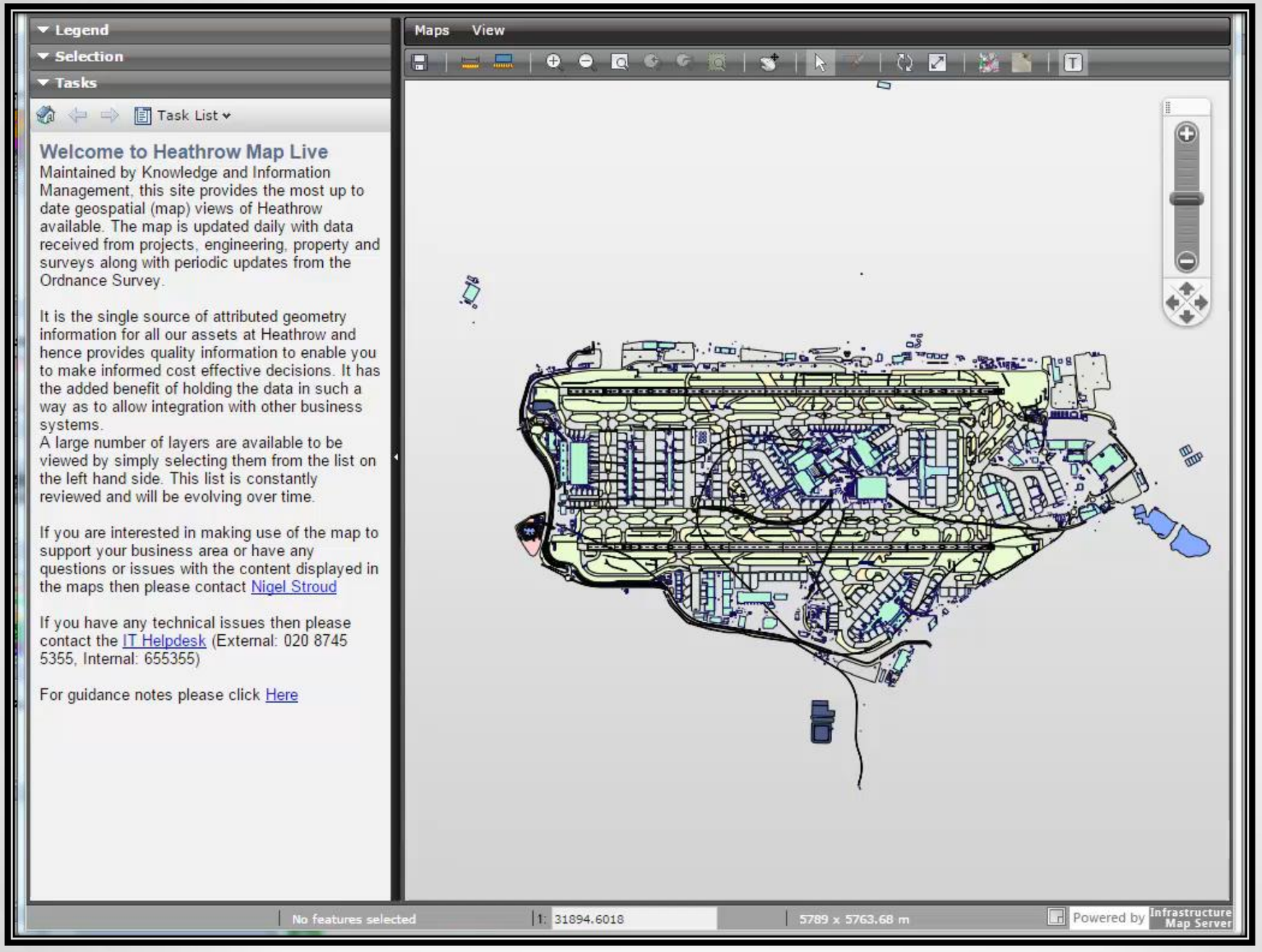


The Views – Engineering Services





Data Capture Accuracy Recorded


Legend
Selection
Tasks
Task List
Welcome to Heathrow Map Live
Maintained by Knowledge and Information Management, this site provides the most up to date geospatial (map) views of Heathrow available. The map is updated daily with data received from projects, engineering, property and surveys along with periodic updates from the Ordnance Survey.
It is the single source of attributed geometry information for all our assets at Heathrow and hence provides quality information to enable you to make informed cost effective decisions. It has the added benefit of holding the data in such a way as to allow integration with other business systems.
A large number of layers are available to be viewed by simply selecting them from the list on the left hand side. This list is constantly reviewed and will be evolving over time.
If you are interested in making use of the map to support your business area or have any questions or issues with the content displayed in the maps then please contact Nigel Stroud
If you have any technical issues then please contact the IT Helpdesk (External: 020 8745 5355, Internal: 655355)
For guidance notes please click Here
Maps
View
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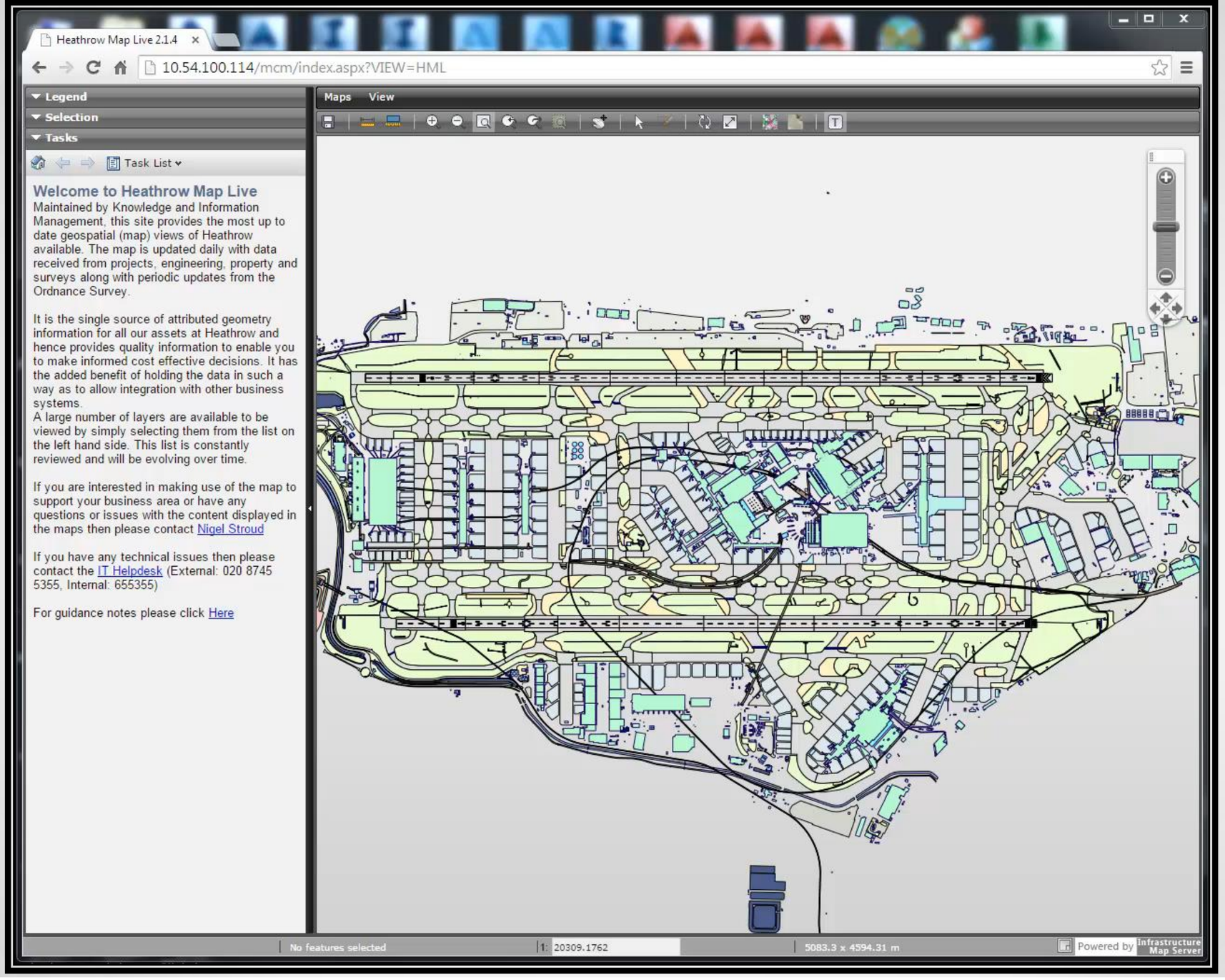
Powered by Infrastructure Map Server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Tasks
Task List
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Maps
View
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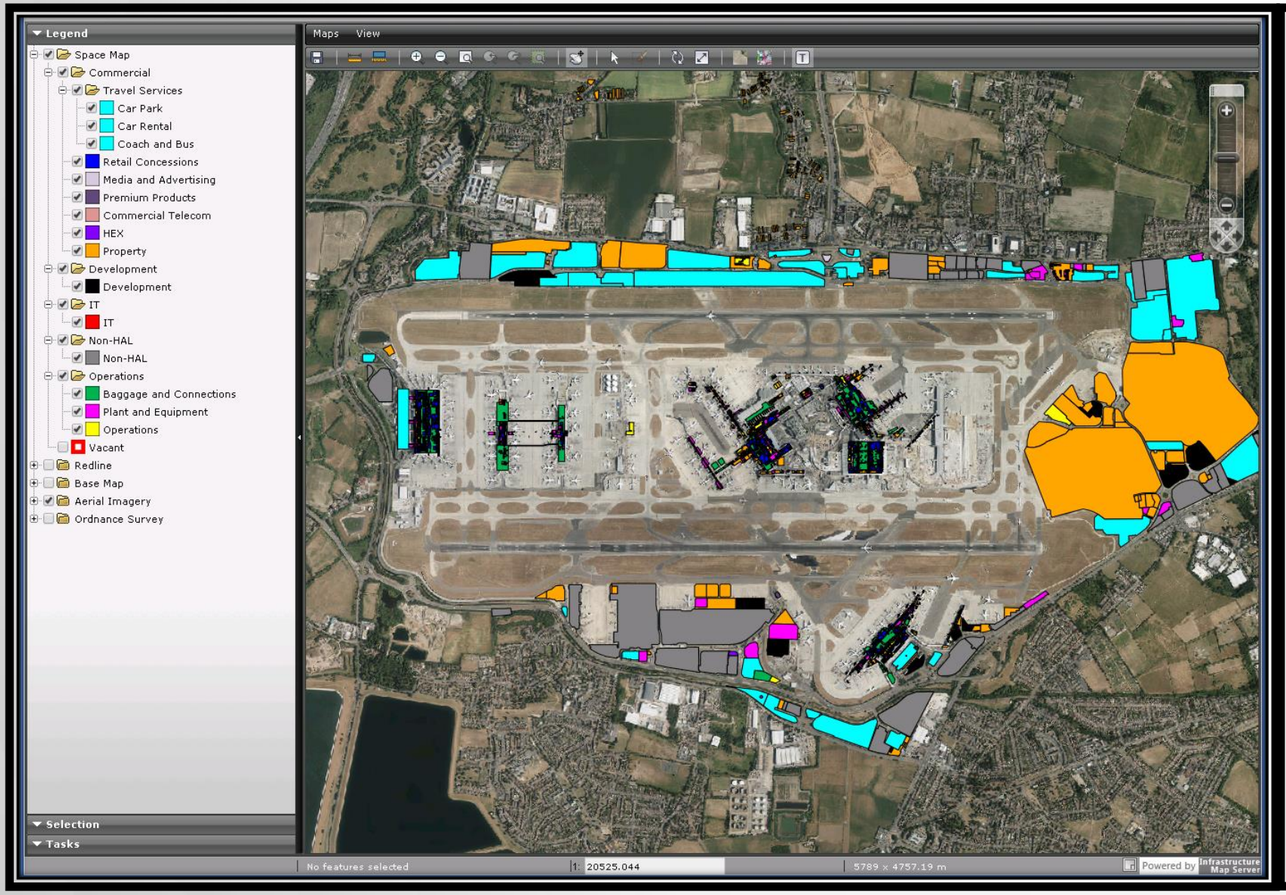
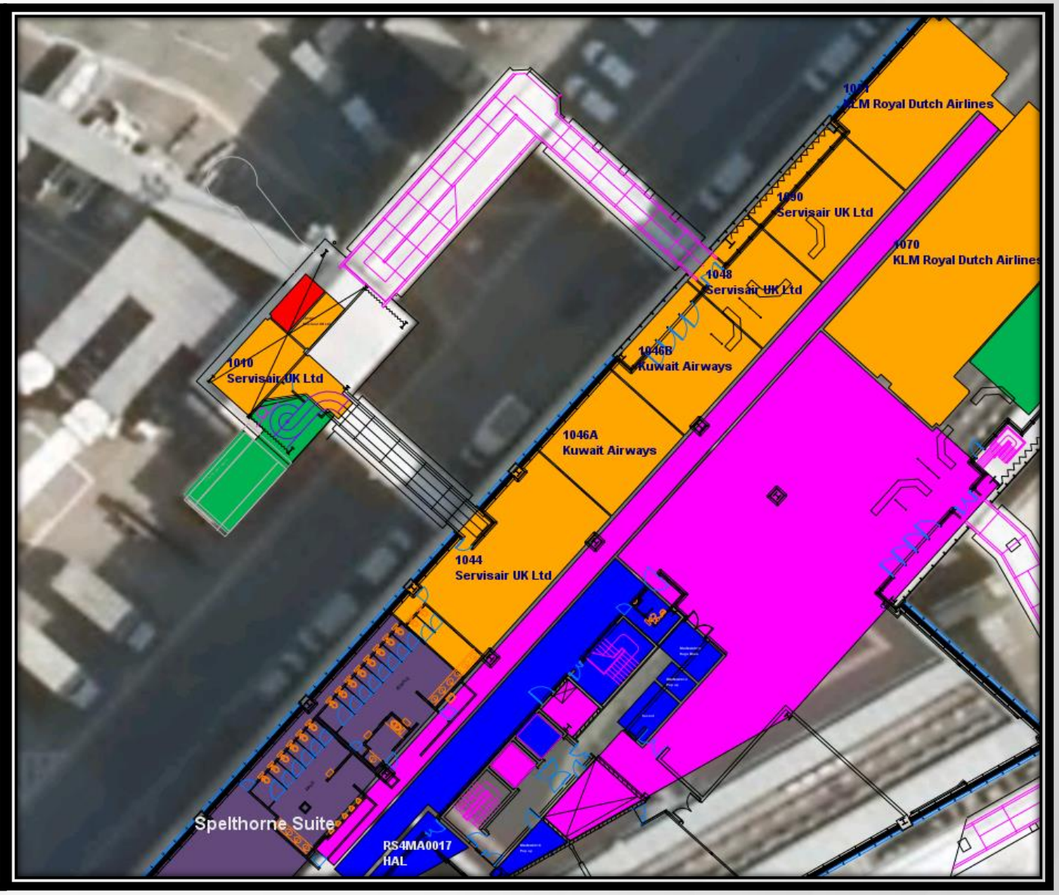
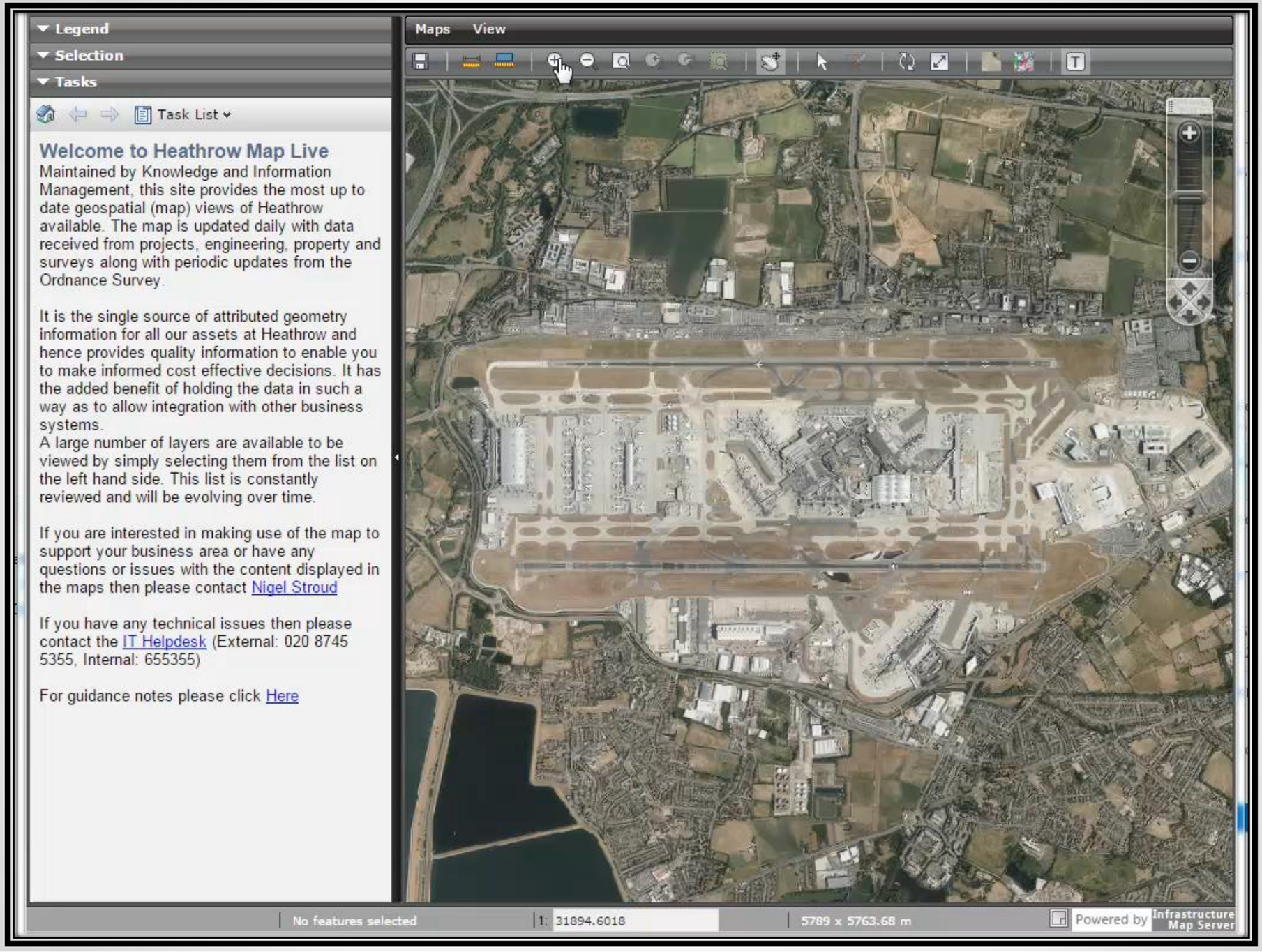
The Views – Property

- Enable strategic decisions to be made with a robust set of information to ensure that the diverse Heathrow portfolio is professionally managed. The creation of strategies of vacant space and highlighting additional income opportunities.



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Tasks
Task List
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Maps
View
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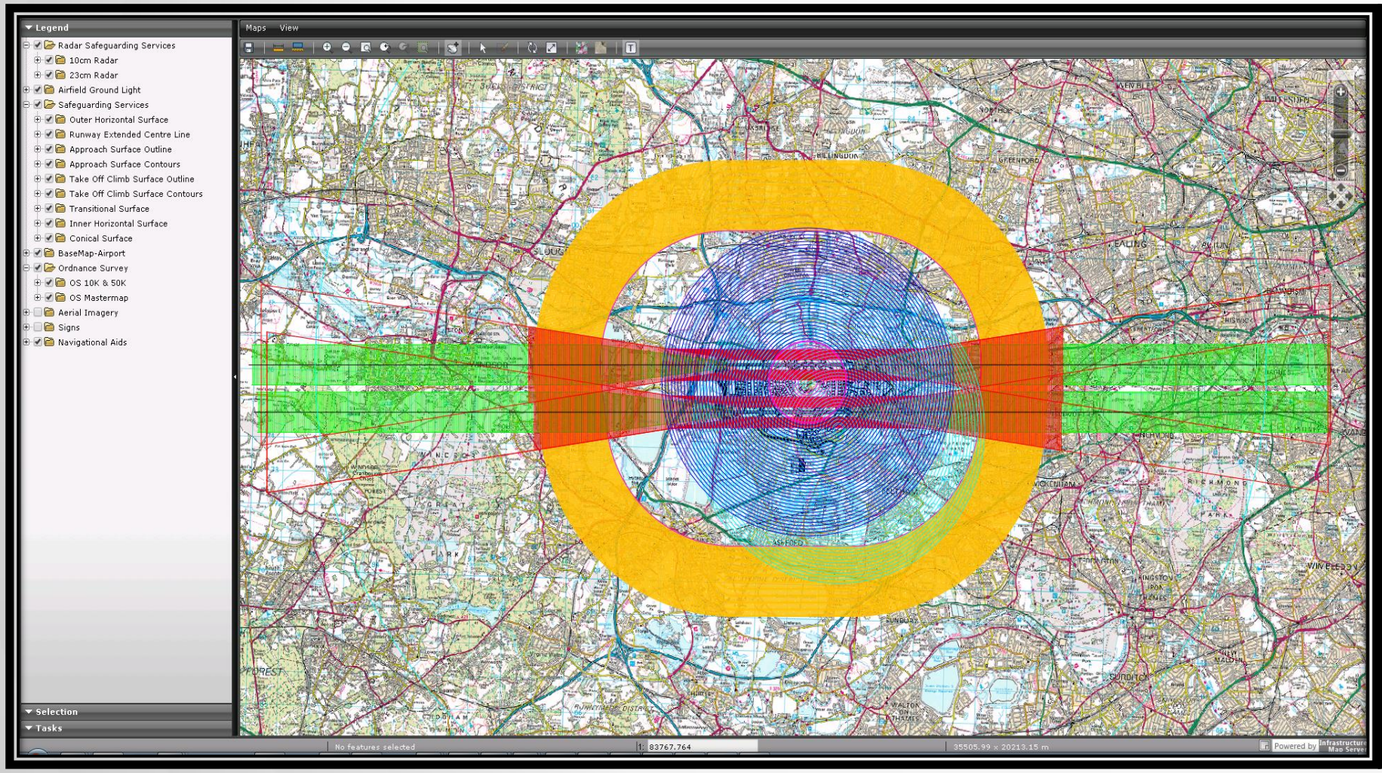
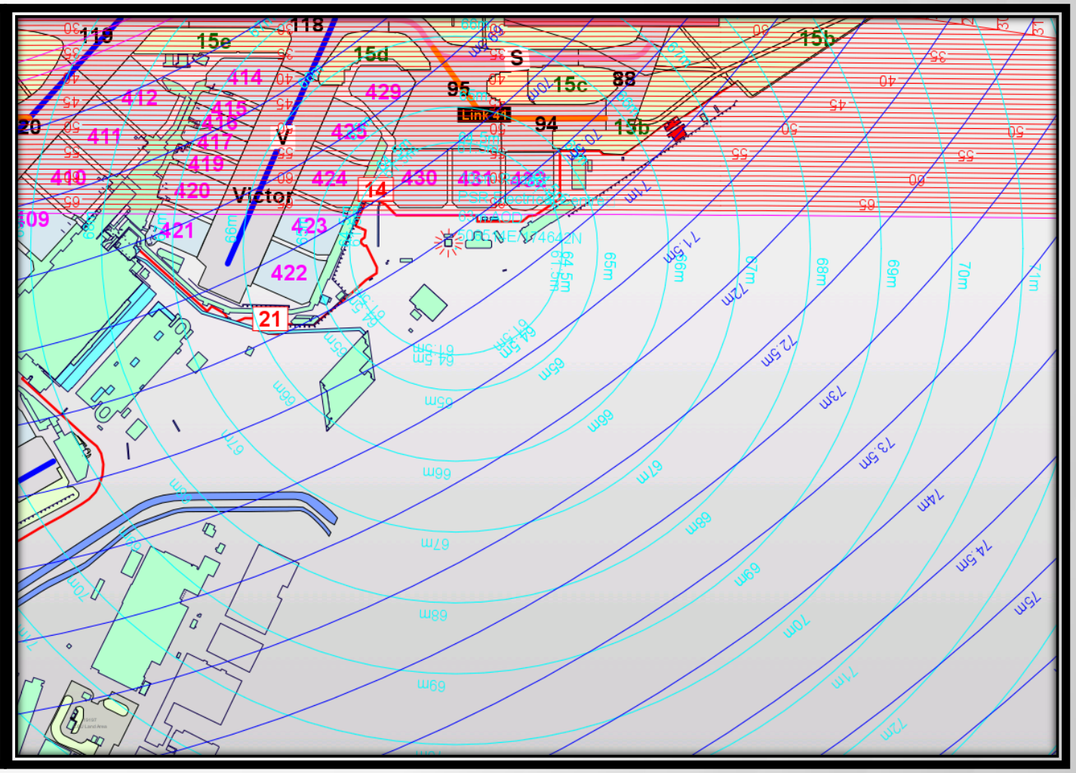
The Views – Safe Guarding

- Assess what impact a proposed development or construction may have on operations
- CAA requires safeguarding mapping that will assist with the consultation process

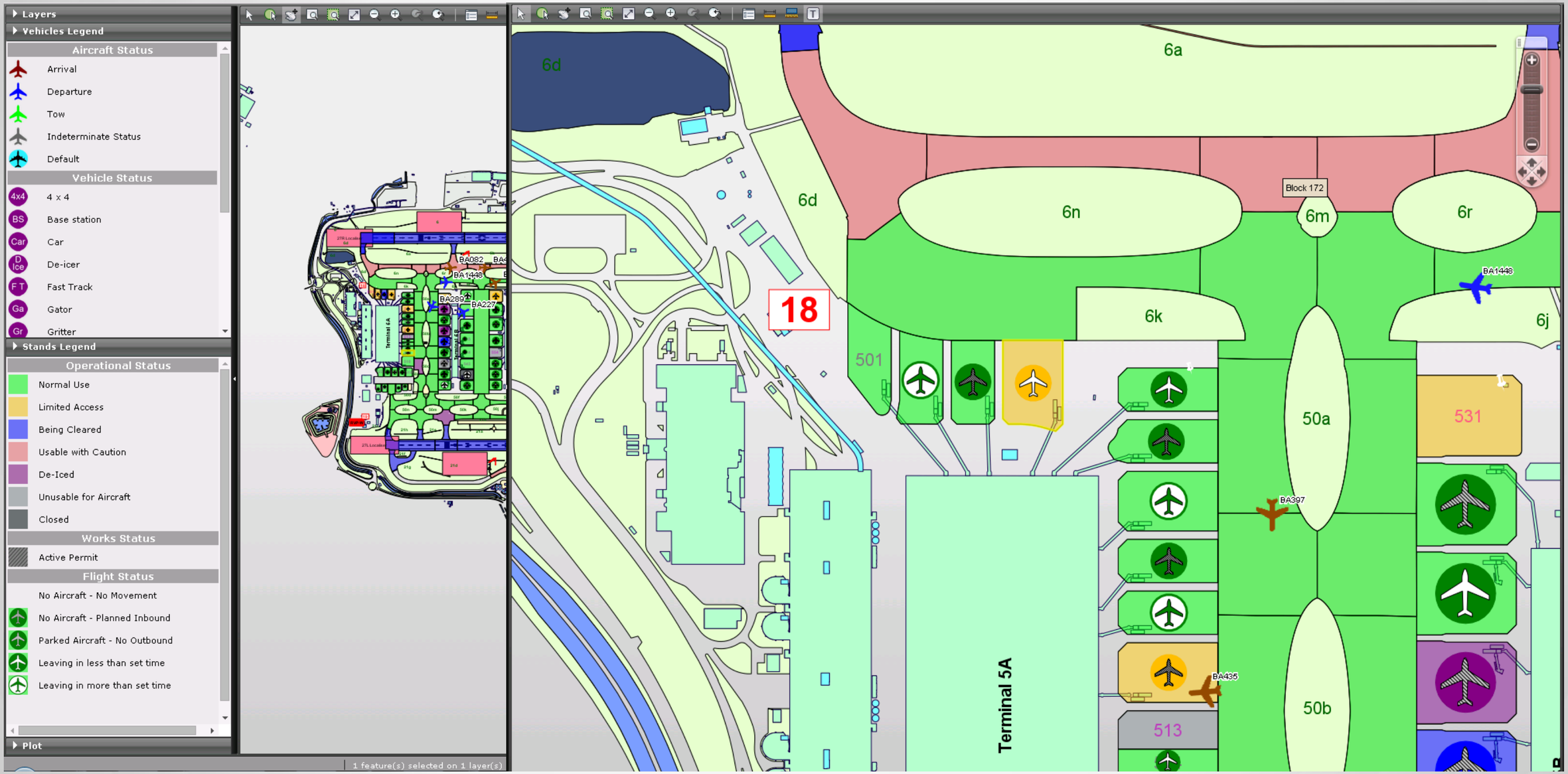




The Views – Winter Resilience

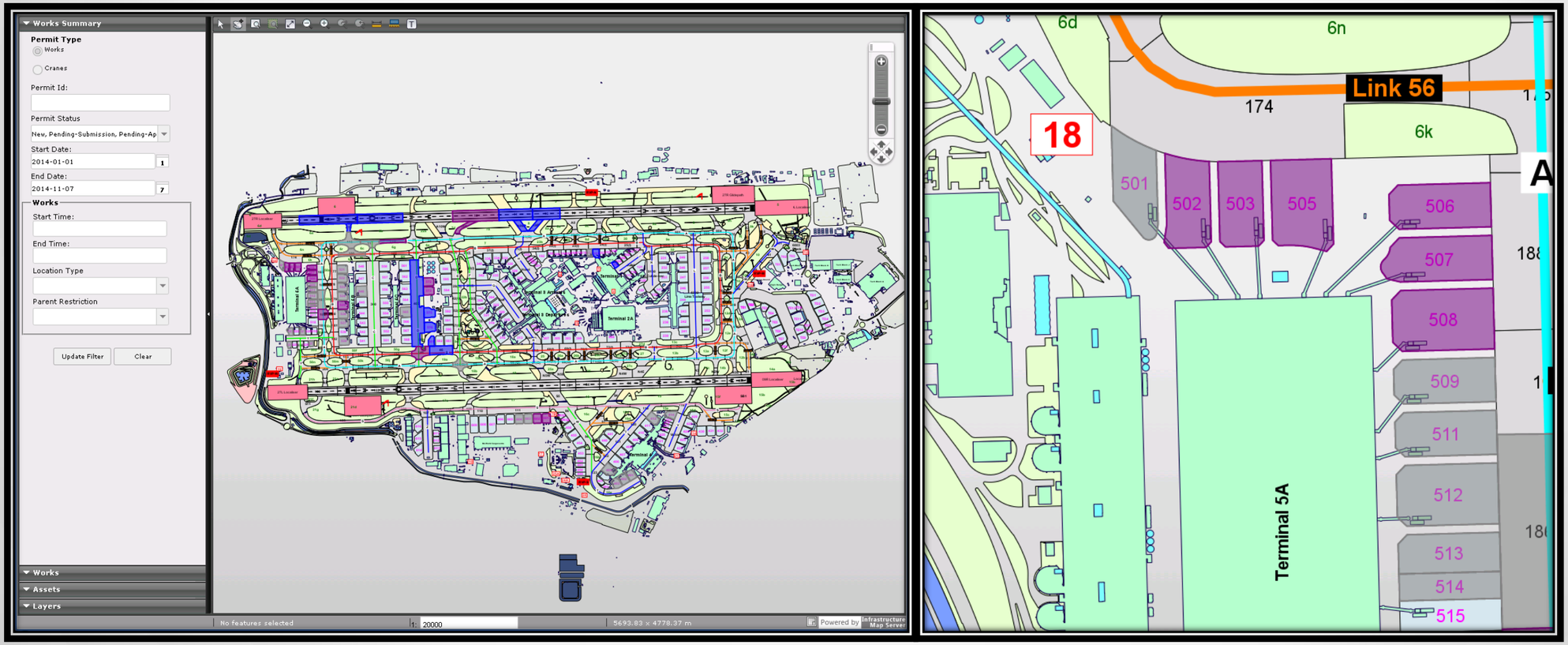
- Weather conditions affect the operations of the airport
- Keeping track of stand availability
- Know where to prioritize and place resources

The Views – Winter Resilience

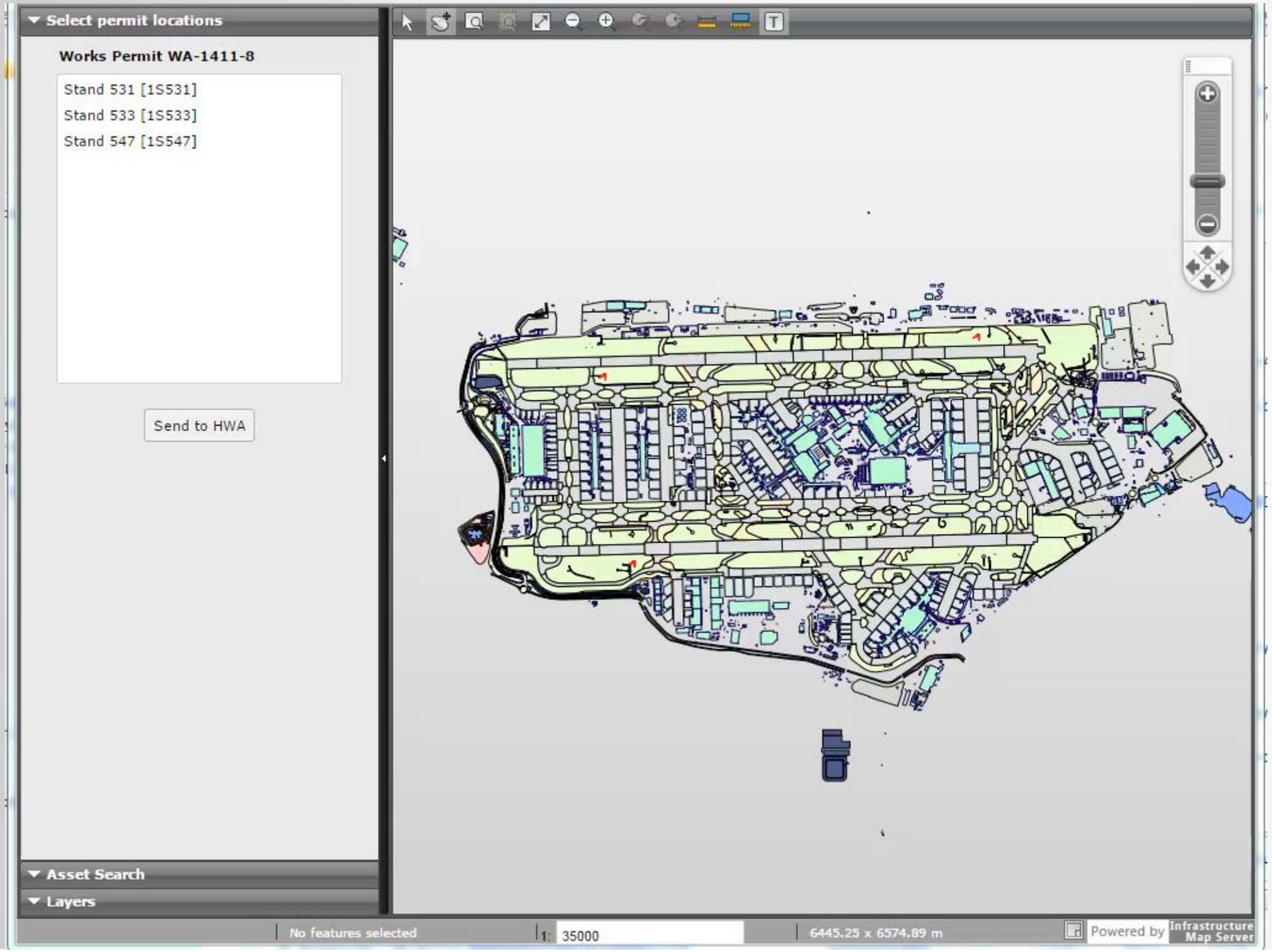


The Views – Works Summary

- Regulation require information on suppliers and projects working at Heathrow
- Visually coordinate work; minimising delays, disappointments and costs resulting from last minute changes, cancellations or remedial work
- Service Clearance

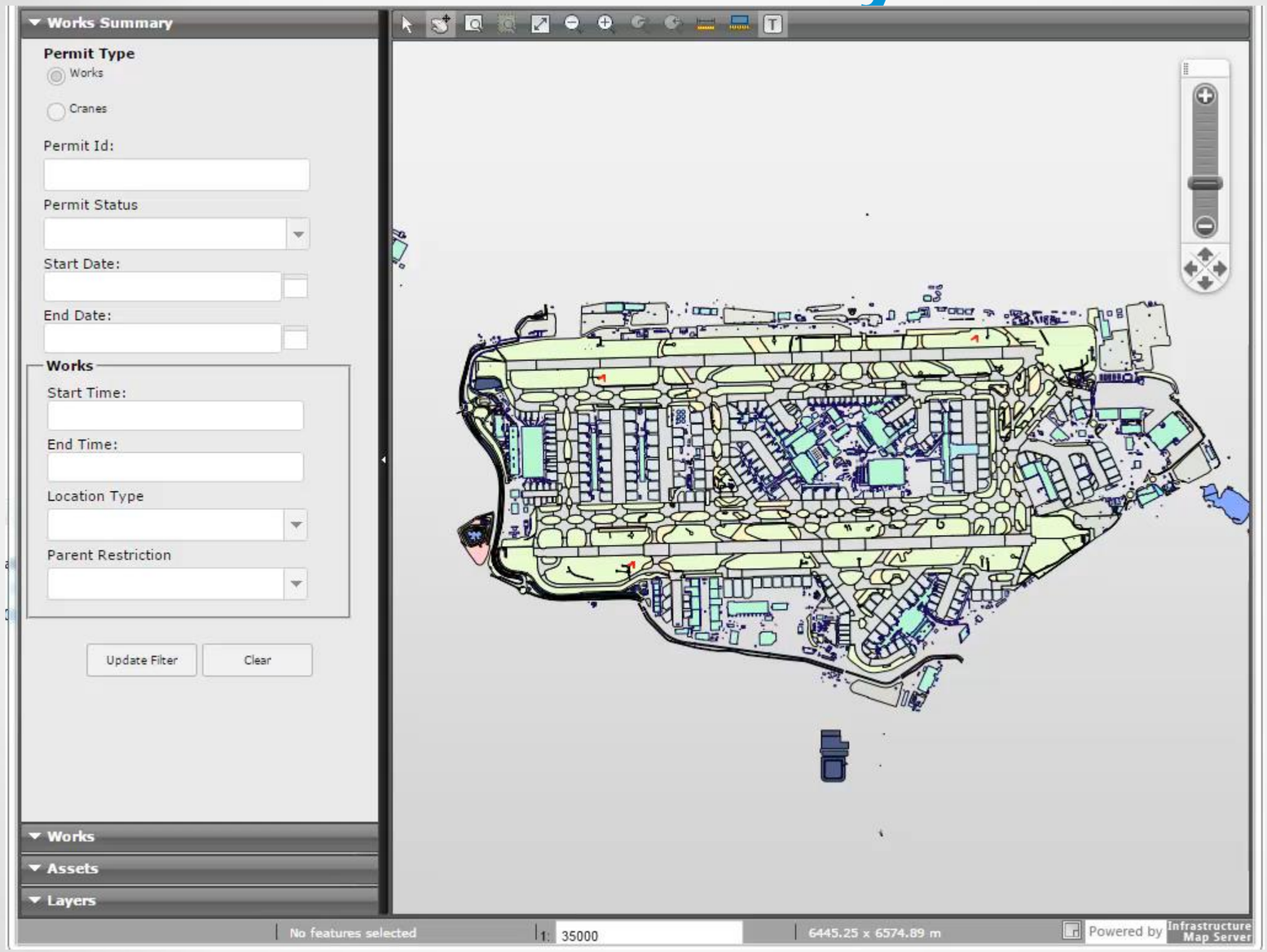


The Views – Works Location



- Interface with Works Management System to visually update Work Permits.

The Views – Works Summary



The Solution & Interfaces

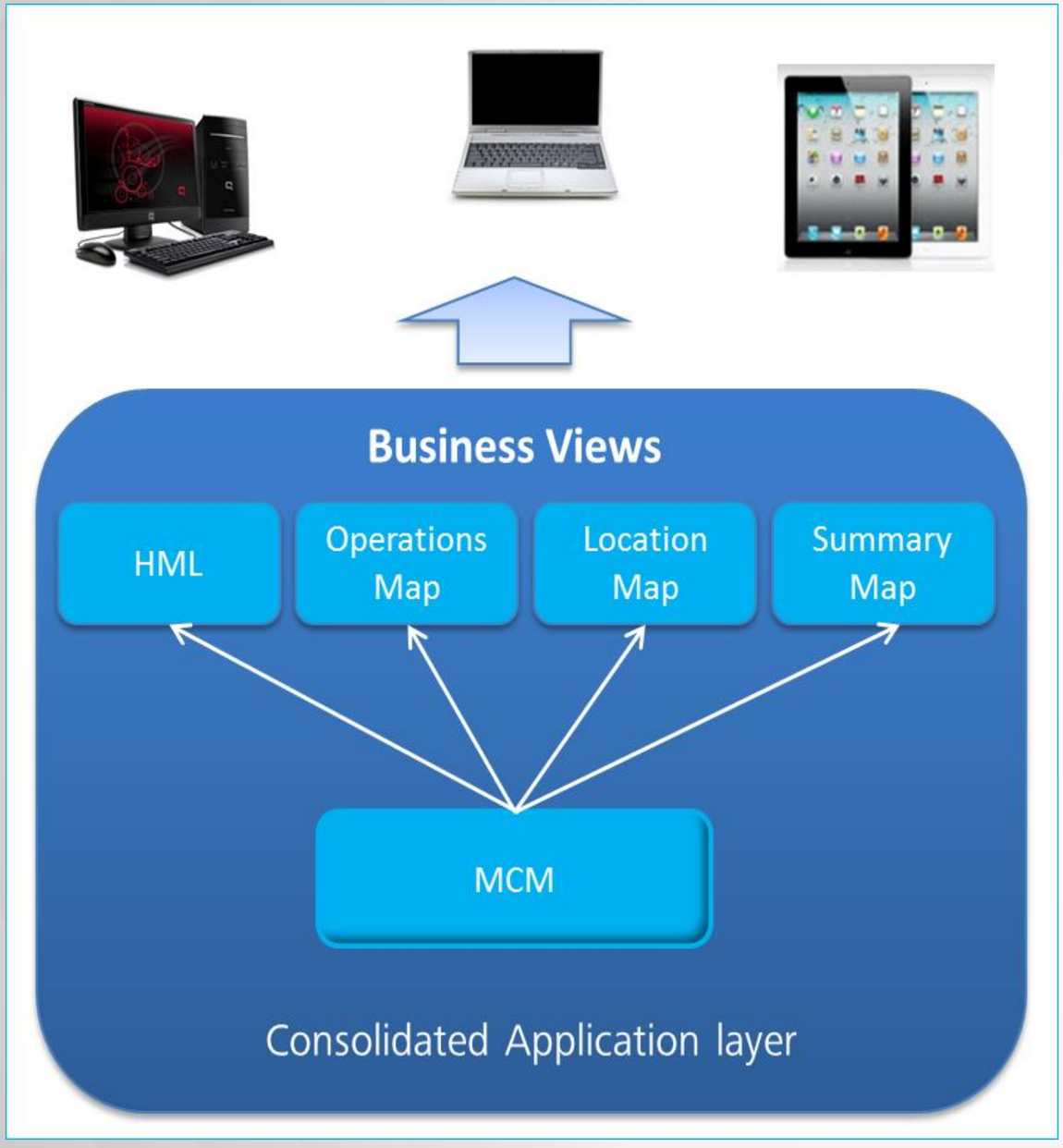
Heathrow Map Live Metrics

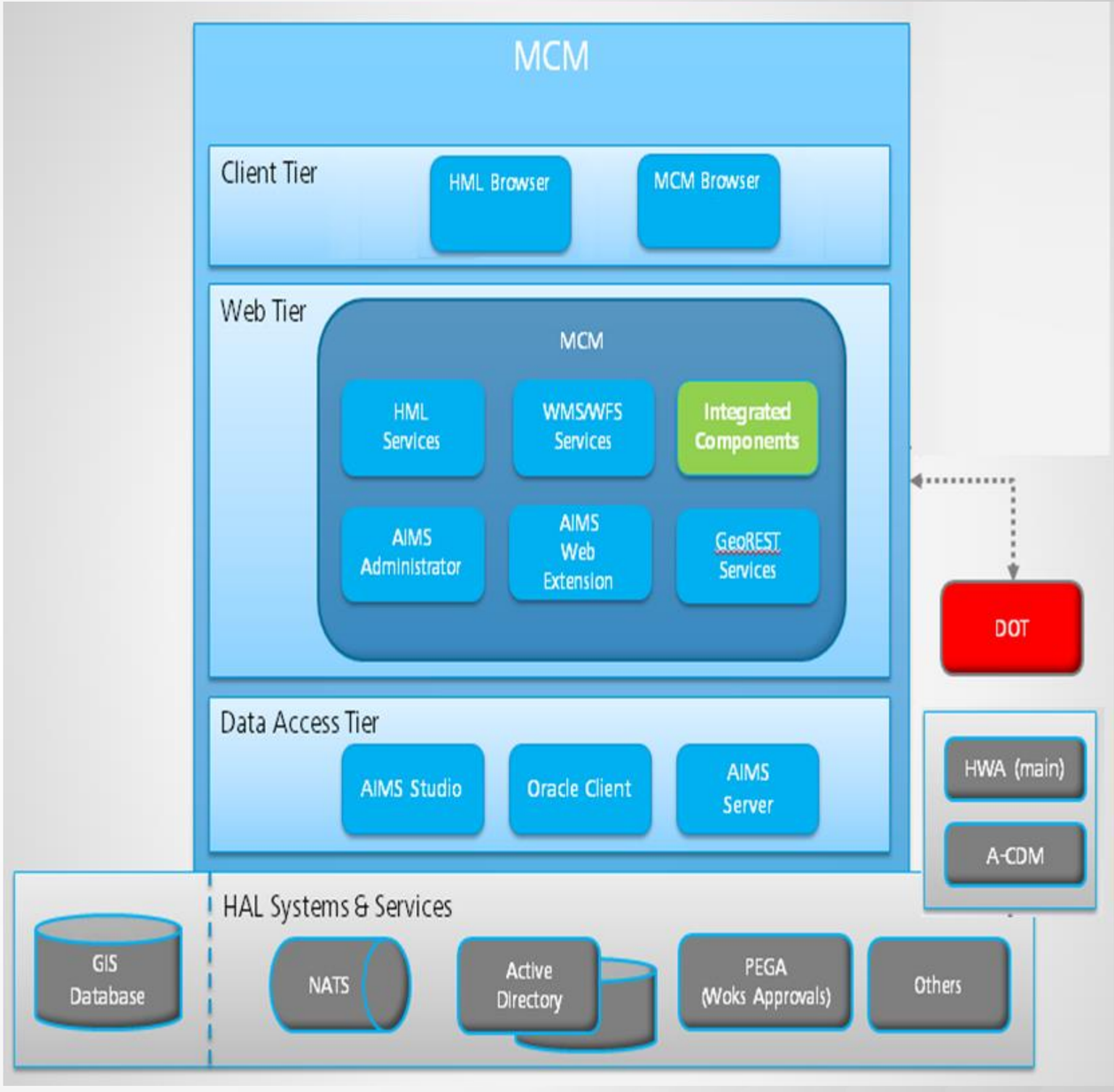
- 1000+ x Heathrow Map Live Users
  - AUTODESK® INFRASTRUCTURE MAP SERVER
  - Access to Live Geometry and Attribute Data
  - Asset Location
  - Internal Building Models
  - Dynamic Data: Aircraft, Ground Vehicles, PEGA
- 10 x AUTODESK® AUTOCAD® MAP 3D
  - Enterprise Industry Models
  - CAD Integration / Data Maintenance
  - Service Clearance Plotted Output
  - Reporting Data

HML DATA SPECIFICATION

- Number of Service Assets within this Area: 250,000+
- Number of Base Map Features within this Area: 250,000+
- Number of Topographic Features within this Area: 750,000+
- Data Stored in Airport Grid (Heathrow Defined Coordinate System)

Data set	Type	Estimated size in Generation
Services and BAA Topographic base map	Oracle tablespace	5Gb (Includes datafiles and indexes)
Ordnance survey base map	Oracle tablespace	1.5Gb (Includes datafiles and indexes)
Air quality SHP files	File SAN storage	0.5 Gb
Enviro SHP files	File SAN storage	1 Gb
Project DWG files	File SAN storage	1 Gb
Ordnance Survey Raster files	File SAN storage	3.5Gb
Aerial Photography	File SAN storage	2Gb
Total		14.5


Business Views
HML
Operations Map
Location Map
Summary Map
MCM
Consolidated Application layer


MCM
Client Tier
HML Browser
MCM Browser
Web Tier
MCM
HML Services
WMS/WFS Services
Integrated Components
AIMS Administrator
AIMS Web Extension
GeoREST Services
Data Access Tier
AIMS Studio
Oracle Client
AIMS Server
DOT
HWA (main)
A-CDM
HAL Systems & Services
GIS Database
NATS
Active Directory
PEGA (Woks Approvals)
Others

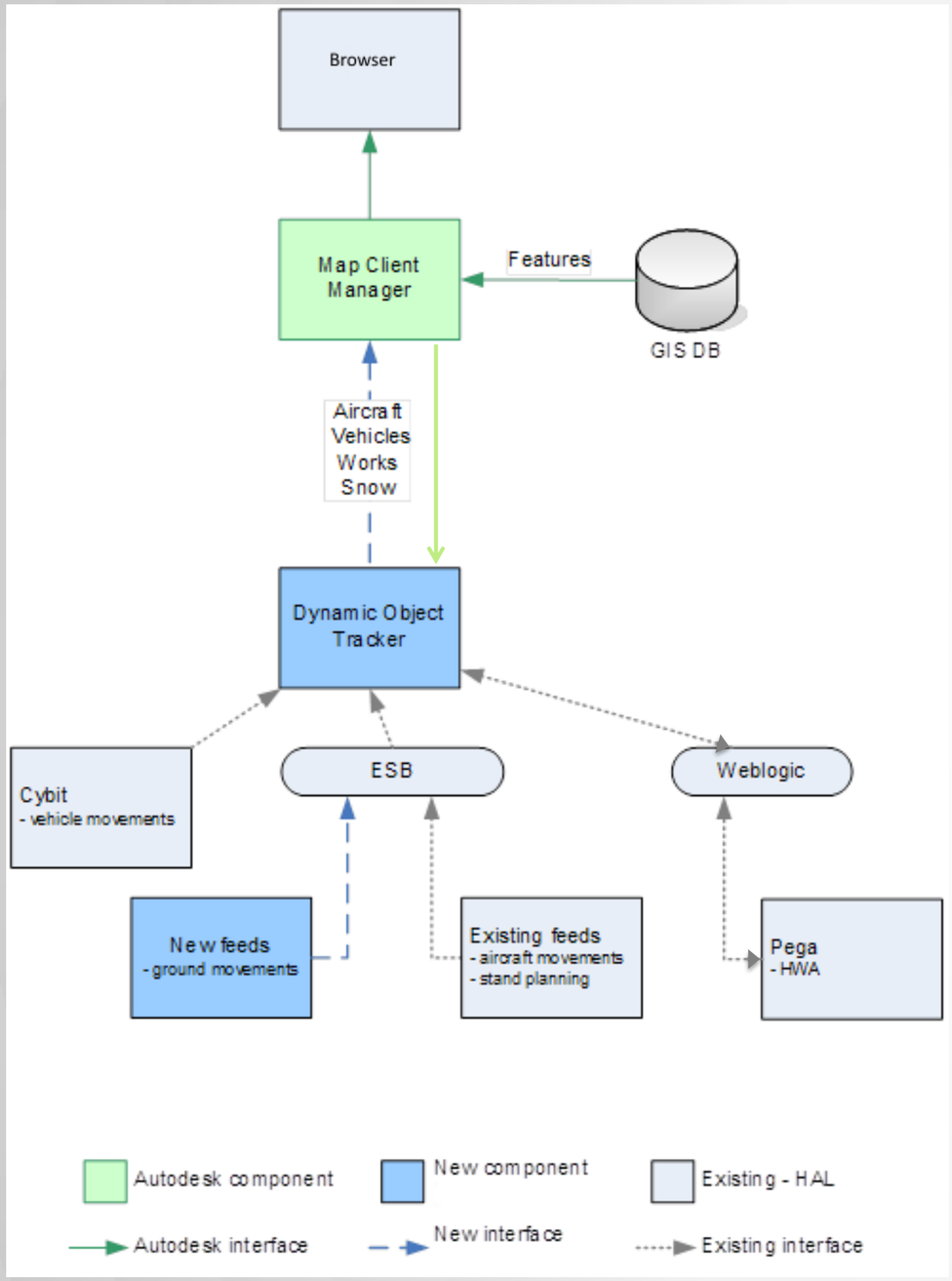


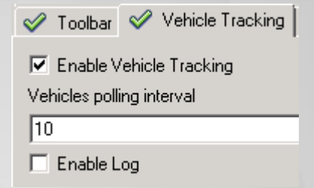
	Diagram element	Description
1	Browser	Internet Explorer (HAL's standard browser) on laptop or desktop PC that is used to display the map GUI. Most interactions with the map are initiated by the user via the map GUI. Heathrow Works Approval can launch the map with a specified set of works/cranes to display
2	Map Client Manager	An Autodesk provided web-server that services the requests coming through from the map clients and displays the appropriate map accordingly. Autodesk Infrastructure Map Server
3	Dynamic Object Tracker	A component that aggregates the data feeds for dynamic objects and makes them available to the Map Client Manager. The principle items are aircraft positions, vehicle positions, works and snow statuses for assets
4	GIS	Heathrow's Geospatial database containing data in Autodesk Map Enterprise Schema
5	ESB	SonicMQ based enterprise service bus
6	Pega	Pega application holds works orders data. It presents a JMS Weblogic interface.
7	Existing feeds	Existing feeds supply data to the message bus – for example the aircraft movements. The box is for information purposes only as the data will be taken from the bus using the bus message specification.

Flexible Layout & Widgets

Asset Widget

Oracle View for display
REST Web Service for Update

Vehicle Tracking Widget



Open Layers
Rest Web Service
CYBIT via DOT

Geospatial Data

Map Enterprise Industry Model
Aerial Photography
National Land Mapping
Oracle, Raster

Static Legends Widget

Static Legend Html

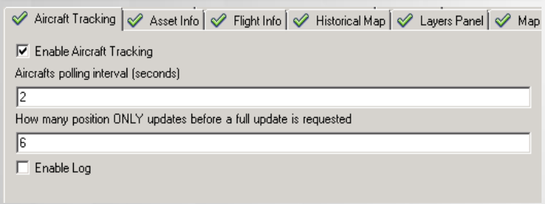
Search Widget

Vehicles, Aircraft,
Stands & Blocks
DOT & GEORest

Flights Widget

AIMS Rendered
Rest Web Service
ESB via DOT

Aircraft Tracking Widget

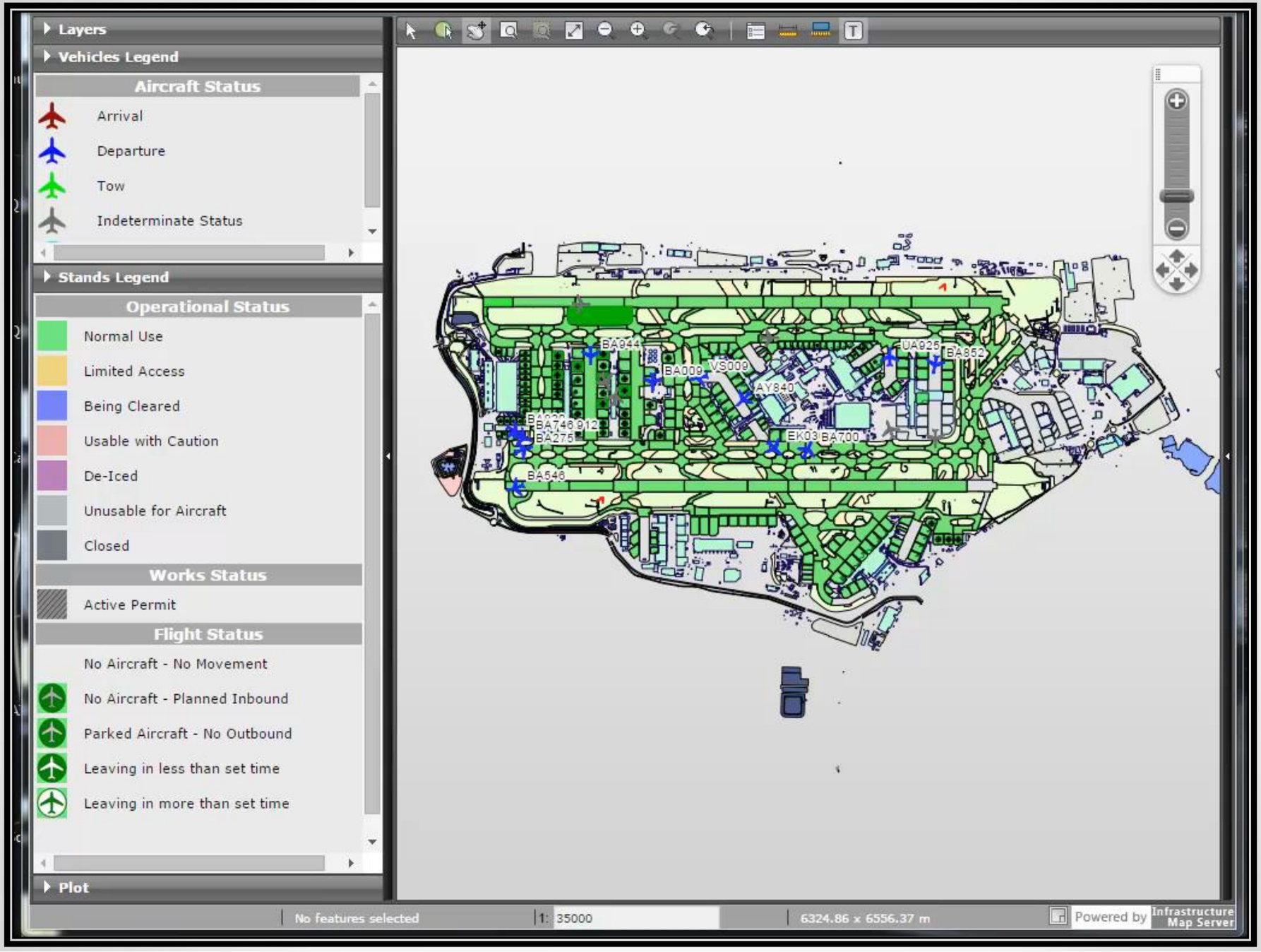


Open Layers
Rest Web Service
ESB via DOT

Works Widget

AIMS Rendered
Rest Web Service
PEGA via DOT

AUTODESK.


Layers
Vehicles Legend
Aircraft Status
Arrival
Departure
Tow
Indeterminate Status
Stands Legend
Operational Status
Normal Use
Limited Access
Being Cleared
Usable with Caution
De-Iced
Unusable for Aircraft
Closed
Works Status
Active Permit
Flight Status
No Aircraft - No Movement
No Aircraft - Planned Inbound
Parked Aircraft - No Outbound
Leaving in less than set time
Leaving in more than set time
Plot
BA944
BA009
VS009
AY840
UA925
BA852
BA746
912
BA275
EK03
BA700
BA546
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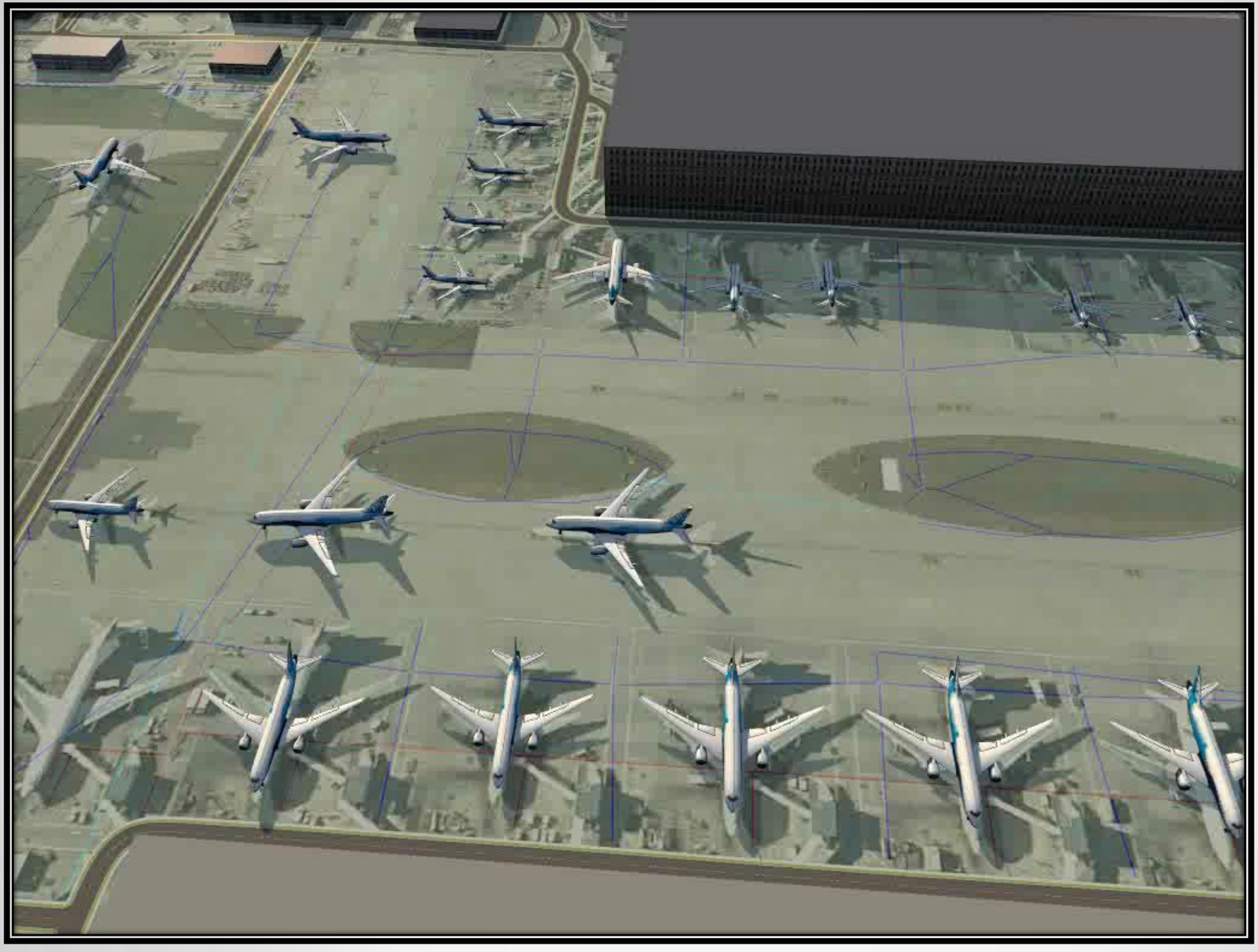
6324.86 x 6556.37 m
Powered by
Infrastructure Map Server

HML Interfacing Systems

- Cybit via DOT (Ground Vehicles)
- IBM MAXIMO
  - Basic URL Geolocation
  - POC with Maximo
    - Work Order Creation within HML
    - Visualising Work Orders within HML
- NATS via ESB and DOT (Aircraft and Flight Data)
- PEGA via DOT (Works Approval)
- Property Management (Retail and Commercial Space)
- Salesforce – community Relations
- Tyco - CCTV – Visualising Camera locations - POC

INFRAWORKS 360

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Q
&
A
!

Session Feedback

- Via the Survey Stations, email or mobile device
- AU 2014 passes given out each day!
- Best to do it right after the session
- Instructors see results in real-time

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