The role of authoritative data and the challenges for national mapping and land agencies in fulfilling the needs of regional, national and global development

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Director General and Chief Executive

Ordnance Survey

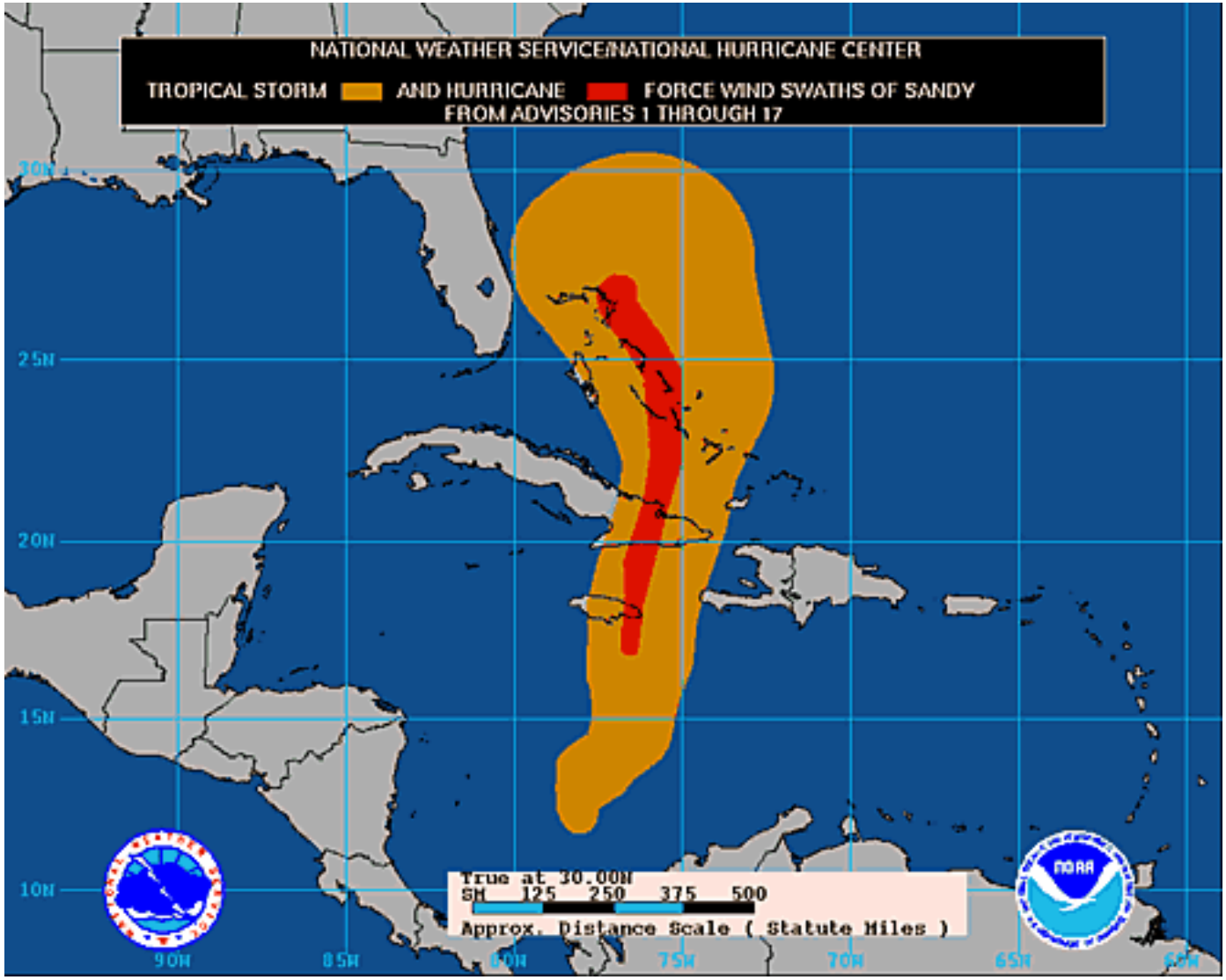
28th March 2014


MAPBOX MAP OF EDINBURGH
A VINTAGE MAP OF THE CITY
MY MAP OR YOURS?
AN 18TH CENTURY MAP
GeoConnexion
Geographic data leads the way to better healthcare
A SMARTER APPROACH
Insurers can build a more sophisticated view of risk by embracing geographic intelligence data
By Sarah Adams
ComputerWeekly.com
Ordnance Survey: Insurance industry can harness big data analytics
LOCATION IS EVERYTHING
BUSINESS
An accurate map is a valuable business tool for both farmers and landowners. Estate agent and property consultant Knight Frank's Michael McCullough sets out why it's important to keep maps up to date
Protect your interests with up-to-date mapping
ExpertInsight
How to map out your future – for the better
Ordnance Survey puts everything in place
INDUSTRY VIEW
UK in lead as maps become 'vital to running a business'
By Rhiannon Williams
THE EXTRA MILE
Sarah Adams, financial services sector manager, Ordnance Survey

Everything happens somewhere

Everything happens somewhere

Everything happens somewhere: Hurricane Sandy



RIO+20

United Nations Conference on Sustainable Development

Accurate location information assisting better decision-making in:

- Water management
- Food management; food supply and sustainable agriculture
- Sustainable energy

Rio+20 conference

RIO+20
United Nations Conference on Sustainable Development

Monitoring Sustainable Development: Why Location Matters?

UN-GGIM | United Nations Initiative on Global Geospatial Information Management
ggim.un.org

HM Government

“The Future We Want”: 19 June 2012

187. We recognize the importance of early warning systems as part of effective disaster risk reduction at all levels in order to reduce economic and social damages including the loss of human life, and in this regard encourage States to integrate such systems into their national disaster risk reduction strategies and plans. We encourage donors and the international community to enhance international cooperation in support of disaster risk reduction in developing countries as appropriate through technical assistance, technology transfer as mutually agreed, capacity building and training programmes. We further recognize the importance of comprehensive hazard and risk assessments, and knowledge and information sharing, including reliable geospatial information. We commit to undertake and strengthen in a timely manner risk assessment and disaster risk reduction instruments.

274. We recognize the importance of space-technology-based data, in situ monitoring, and reliable geospatial information for sustainable development policy-making, programming and project operations. In this context, we note the relevance of global mapping and recognize the efforts in developing global environmental observing systems, including by the Eye on Earth network and through the Global Earth Observation System of Systems. We recognize the need to support developing countries in their efforts to collect environmental data.

The importance of geospatial information

"I am also pleased to see that the importance of reliable, trusted geographic information is now recognised. The United Nations has now established a Committee of Experts of Member States, which the UK co-chairs, to move this agenda forward"

Rt Hon Nick Clegg MP,
Deputy Prime Minister,
United Kingdom Government,
Rio+20 June 2012

Creating a sustainable city: Masdar City, Abu Dhabi

- ‘The First Carbon Neutral City’
- integrating the use of GIS in every aspect to plan the city
- from ensuring the construction process is efficient and produces zero waste
- to planning the transport and energy network to meet potential demand
- building in monitoring systems into the city infrastructure
- monitoring energy reduction, environmental conservation and social development

Monitoring the City: Managing daily life

- The Rio Operations Centre helps the City Authority watch and manage daily life.

- The Centre integrates information on weather forecasts, water information, traffic flows and any other anomalies in daily life of the city to predict and manage potential situations such as flooding or traffic accidents.

- By monitoring the City and communicating information to local services, including traffic officers, fire services, and flood protection officers, contingency plans can be put in place and the public put on alert to minimise impacts of potential situations.

Brazil: use of GIS improves monitoring and reduces crime in the state of Amazonas

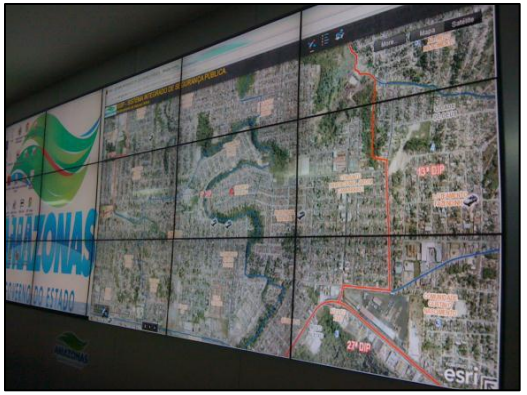
With over 1.5 million km^2 and 3.5 million inhabitants, the State of Amazonas is the largest of the 27 states in Brazil and the second most populous in the Northern region.

The challenge: need for faster police response to incidents and to improve the Integrated Public Safety System (SISP).

The solution: investment of US$ 150 million to map major cities, to implement a geographical information system (GIS) and for hardware acquisition (monitoring cameras and GPS navigator).

The benefits: 10% reduction in police incidents and 13% reduction in homicides in May 2012 in comparison with May 2011, due to the benefits of ‘crime map’ in the State.

Data integration between civil and military police.

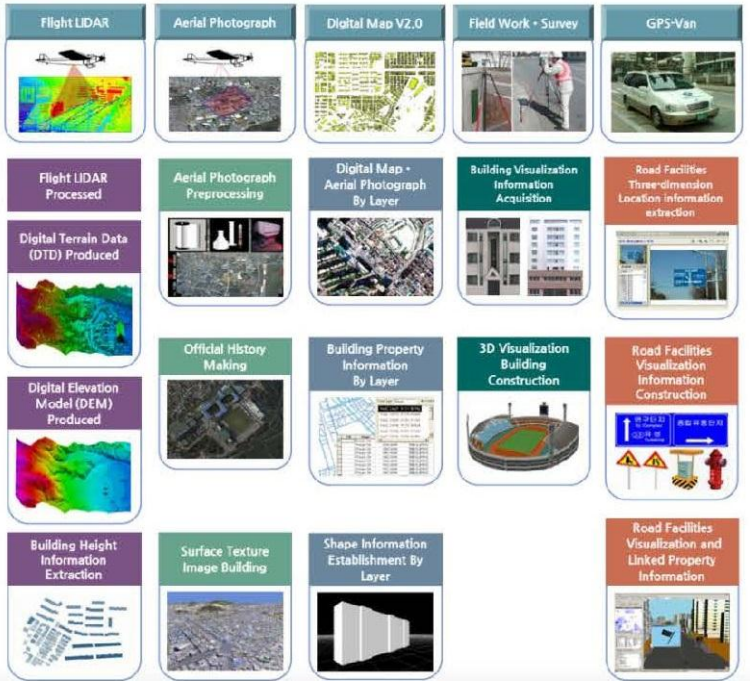


Source: Imagem / Amazon State Governament

Republic of Korea: 3D geospatial information

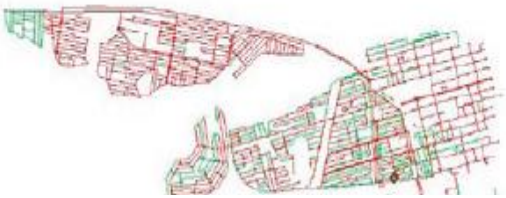
The Republic of Korea is producing the real world into a three dimensional map.

The use of 3D geospatial information allows for sustainable urban planning and developments, **risk and disaster management**, and environmental monitoring much easier.



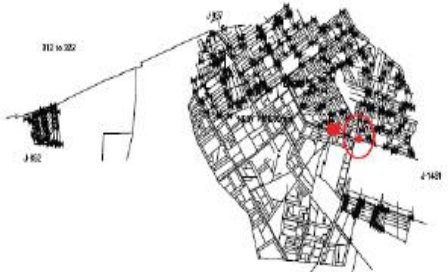
Monitoring local water use: assessing and improving water management

- The Water Plant in Ouagadougou, Burkina Faso uses a GIS-supported monitoring system to manage efficient water use through pressure control, automated valves and leak detection systems.
- By monitoring water flow and use, resources can be managed more effectively to identify areas and times of high use and potentially detect systemic problems such as leaks or illegal water-tapping.
- The more consistent water supply has reduced water theft, raised local awareness of water management and freed up money to be spent on water quality and sanitation.



Area of distribution (top)

Identification of a leak point (bottom)

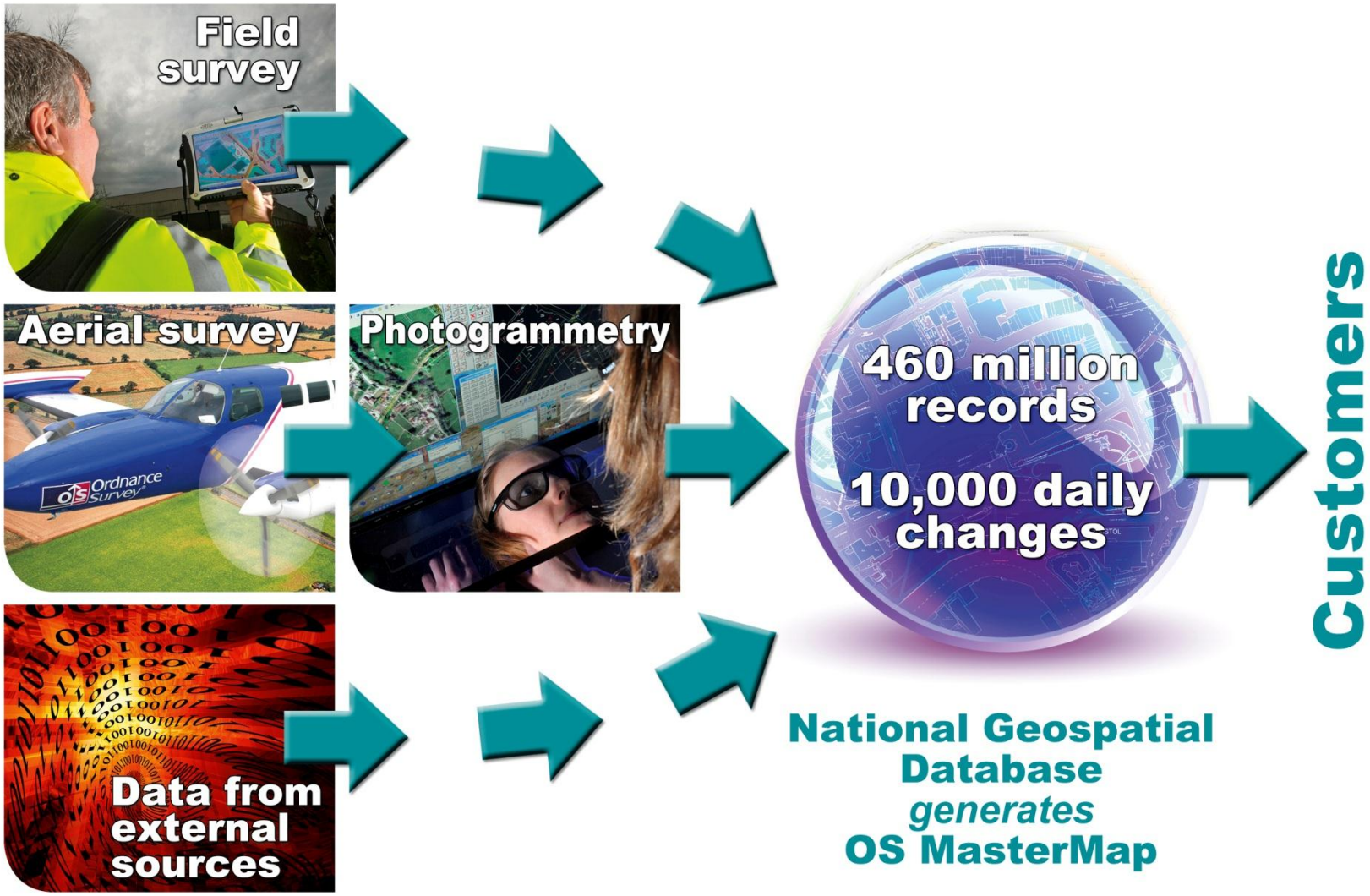


Source: The UN

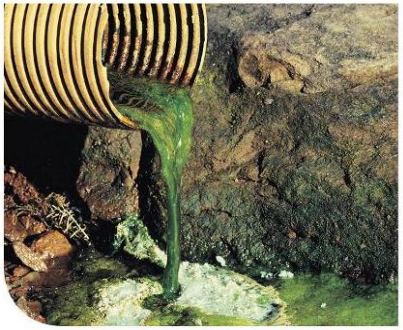
World Bank Offices, London
OS MasterMap® Topography Layer

World Bank Offices, London
OS MasterMap® Imagery Layer

Updating the Ordnance Survey database



Relied upon by the public and private sector…over 3000 public organisations using geographical information to run their businesses










Daventry District Council

Optimising waste collection using OS MasterMap Integrated Transport Network Layer

- Daventry generated new waste collection routes in all seven districts using OS MasterMap Integrated Transport Layer with Route Restriction Information

- Daventry has been able to rationalise the number of domestic waste collection routes from nine to eight, reducing diesel costs by 12%, increasing spare capacity by 14% and eliminating overtime costs.

'OS MasterMap ITN Layer and Road Routing Information has made it possible for us to meet our challenges of increasing efficiency, planning for growth and reducing landfill. In Daventry alone we are on target to achieve savings of around £100 000 per year, with much greater savings expected for the whole county.'

Jo Gilford
Corporate Manager for Public Space
Daventry District Council

Photograph courtesy of Daventry District Council

Cardiff Council

Cardiff Council delivers more than **£1 300 000 (**$2,161,640) savings from enhanced SEN (special educational needs) route and vehicle management, and efficient contract re-negotiation

'SEN Vehicle Management is having a major impact on how we manage transport needs. It is very easy to use and its intuitive menu system means that you don't have to know the whole system in detail to be able to use it. It is very user-friendly.'

Stephen Gerrard,
Schools' Transport Team Leader,
Cardiff Council

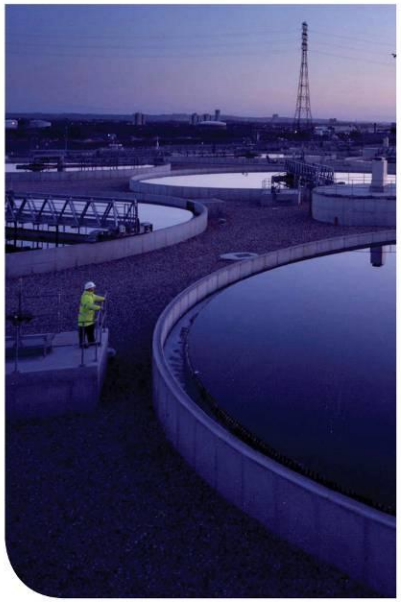
Utility efficiencies by linking customer records to Assets to billing

- What the asset department believes it supplies (blue)…
- Who the billing department believes they are billing (green)…
- Leaving those in red…

Northumbrian Water Limited – investing in GI

The return on investment is real and demonstrable and includes:

- Additional income alone of well over £1m ($1,662,800) through improved management of empty properties.
- A sustainable cut of at least £60,000 ($99,768) in operating costs through the call centre solve-at-source principle.
- Significant savings in time and cost in the provision of timely and accurate asset information to field technicians.



'From the customers' point of view and from the business point of view, GIS has been of great benefit and our investment has been well worth it'.

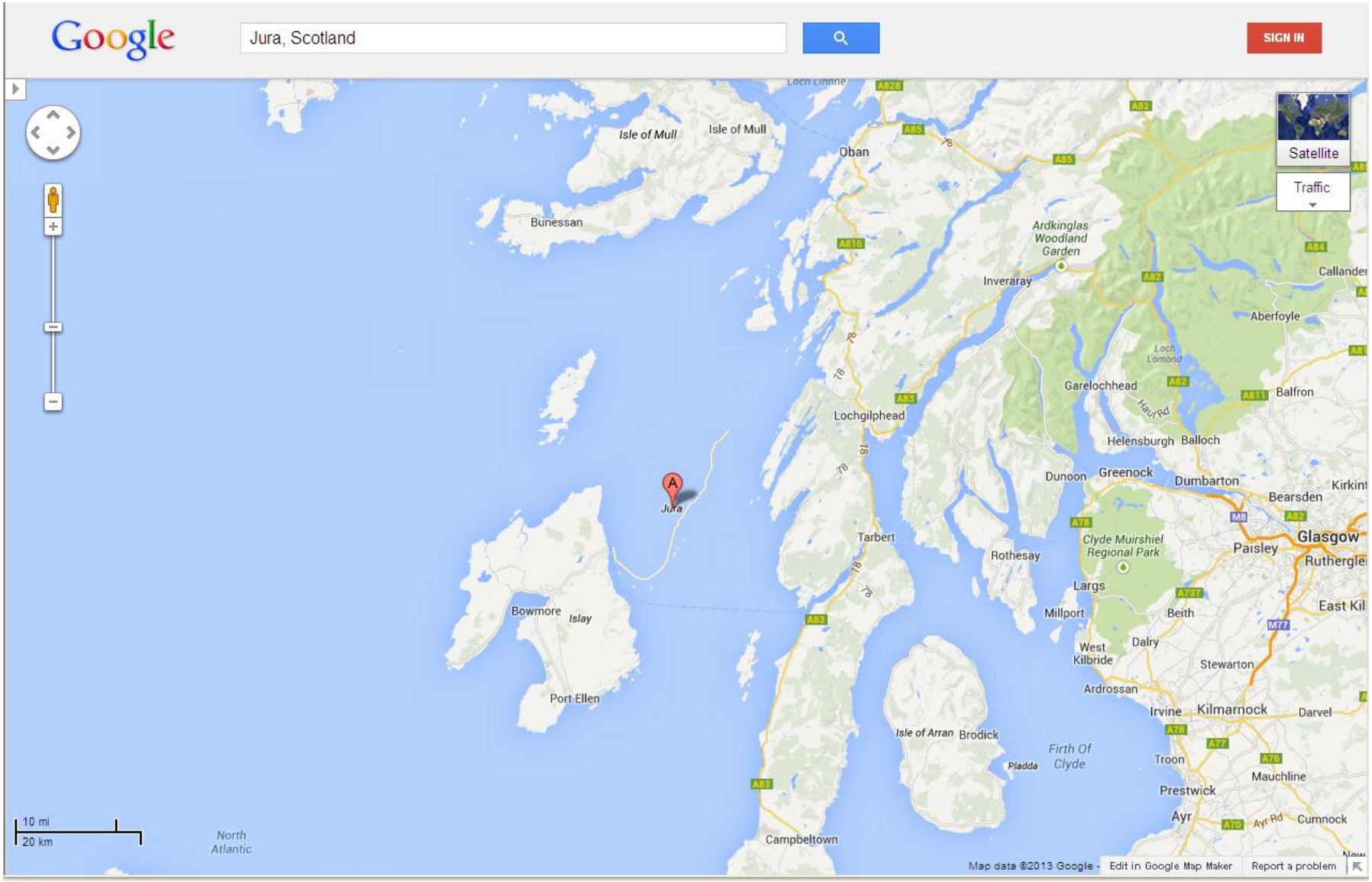
Ian Donald, Customer Services Director concludes:

Increasing patient registrations

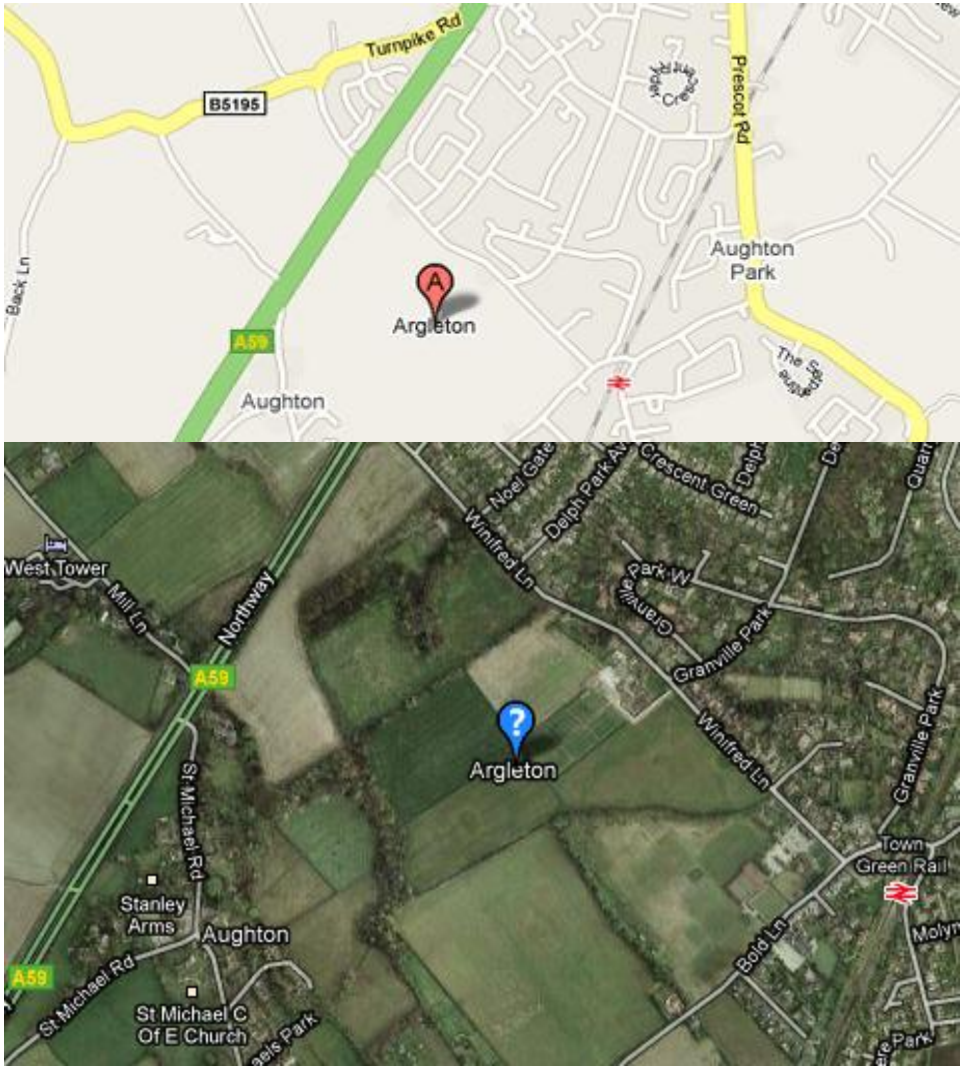
Birmingham Health and Well-being partnership

- **Identifying patient spread**
  - OS MasterMap Address Layer 2 is used with multiple occupancy information
  - The Trust can quickly identify addresses where there is no record of a registered patient
- **Reaching the unregistered**
  - Targeted mail shots encourage people to register with a GP
- **Maximising the benefits**
  - An increase in patient registrations in areas identified as having low registrations
  - Improved patient address list will support future health campaigns and surveys

…Because accuracy matters



“Argleton” – the town which only appears online



Key Stakeholders

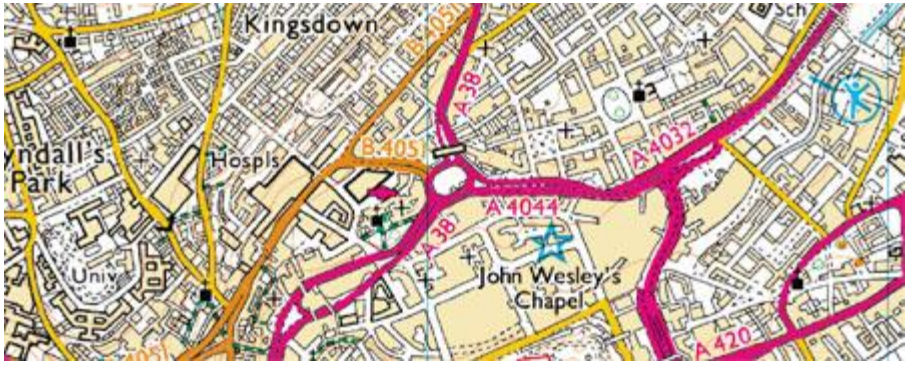
Requirements: Standard products

1. Frequent revision of our large scale topographic data to include all **minor changes** to the built and natural environment.

2. Frequent revision of our **road network** data.

3. Frequent revision of our **address information.**

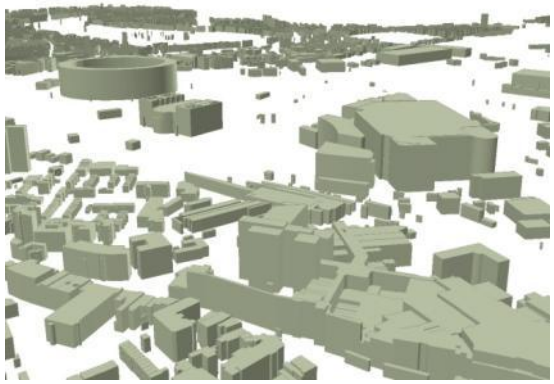
4. Increased publication times for smaller scale products so as to ensure greater **content synchronicity** with our large scale data.



Requirements: Special Information Provision (SIPs)

1. **Street furniture** data captured within agreed areas close to key venues and sensitive sites.

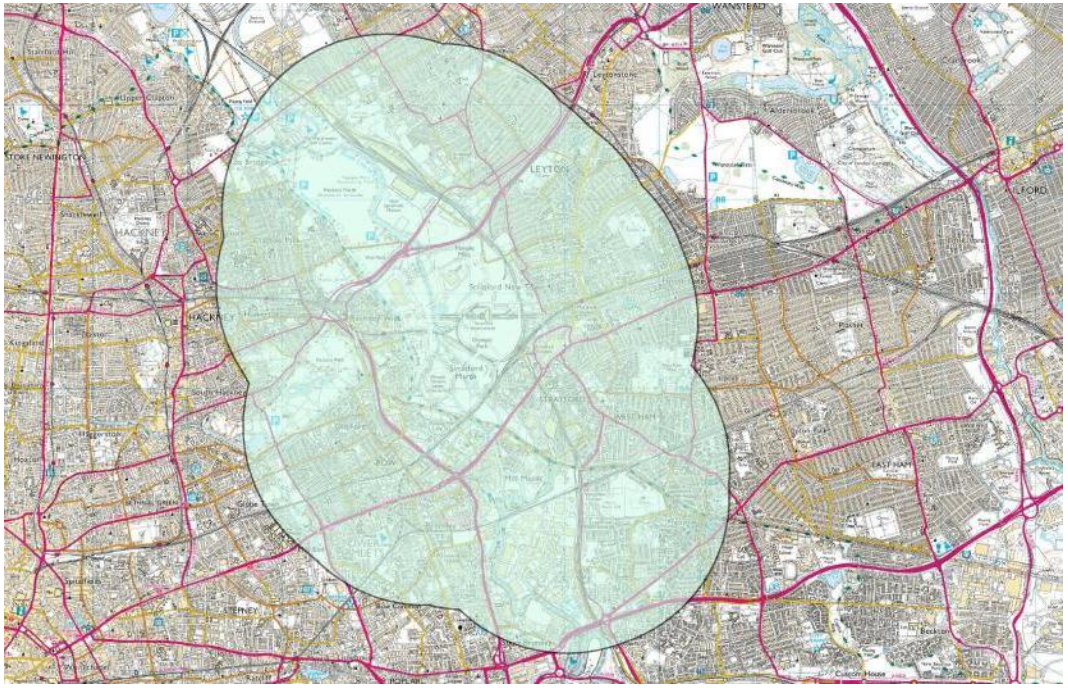
2. **High resolution** ortho-rectified colour aerial imagery (12.5cm, 10cm and 5 cm resolution) for agreed targets.



3. **Simple Building Height** information for all buildings in OS MasterMap Topo within agreed areas.

Requirements: Defining extents

- These extents were refined and modified through discussion and agreement, primarily with Metropolitan Police and MOD

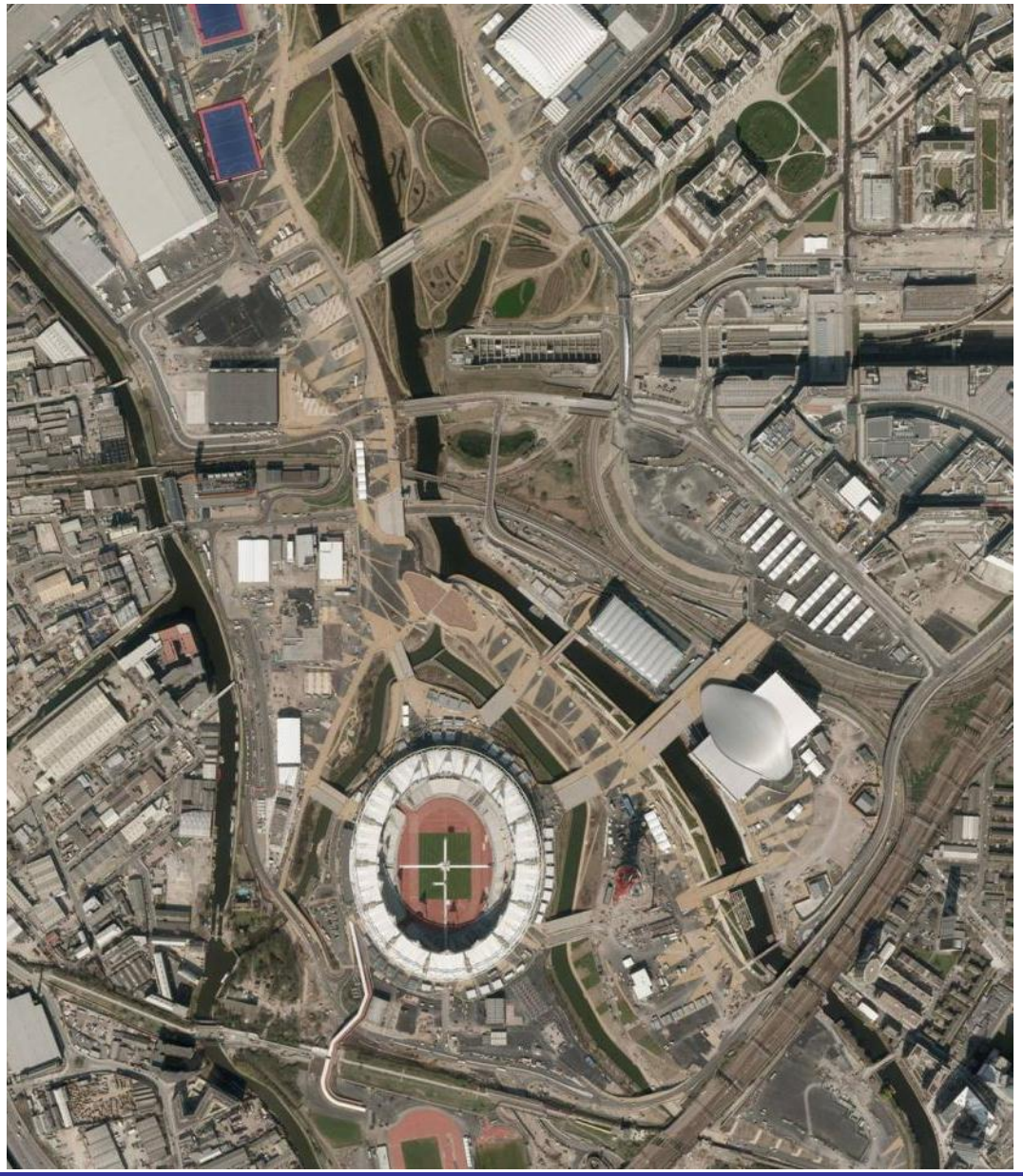


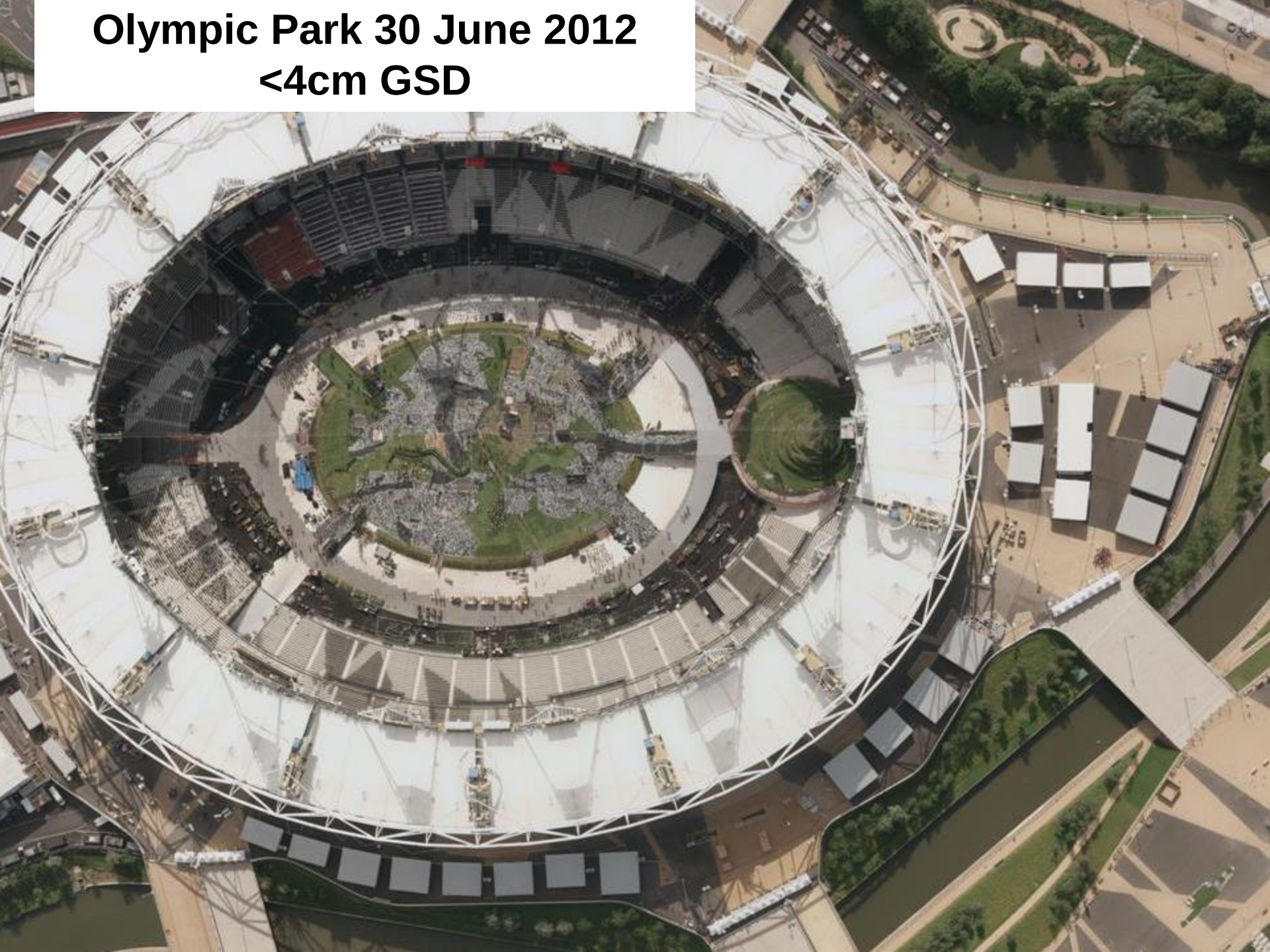
Original buffered polygons refined and venue extents agreed for 87 kms.

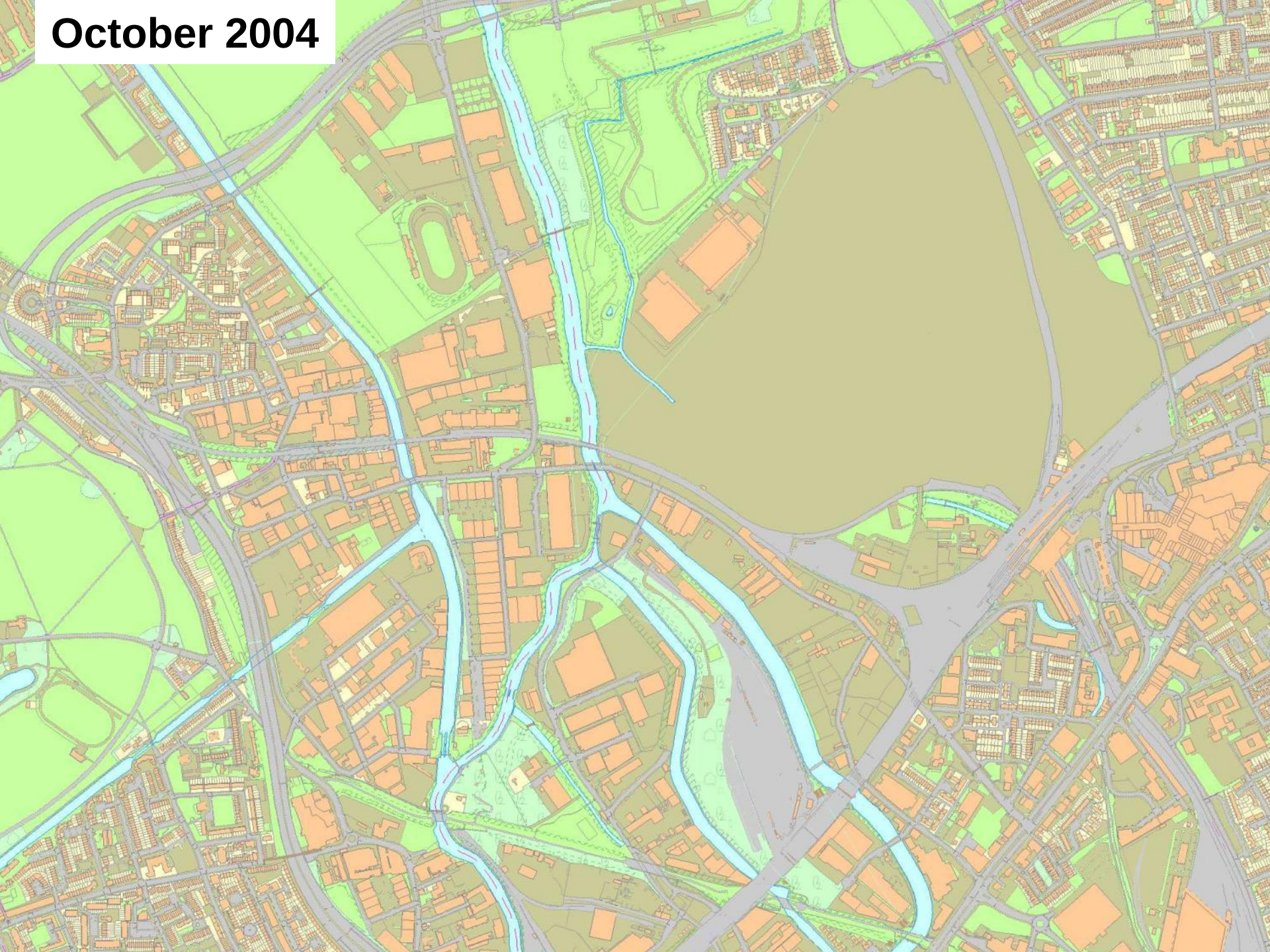
Olympic Park	24 kms
Other key venues	51 kms
Weymouth	5 kms
Football stadia	7 kms

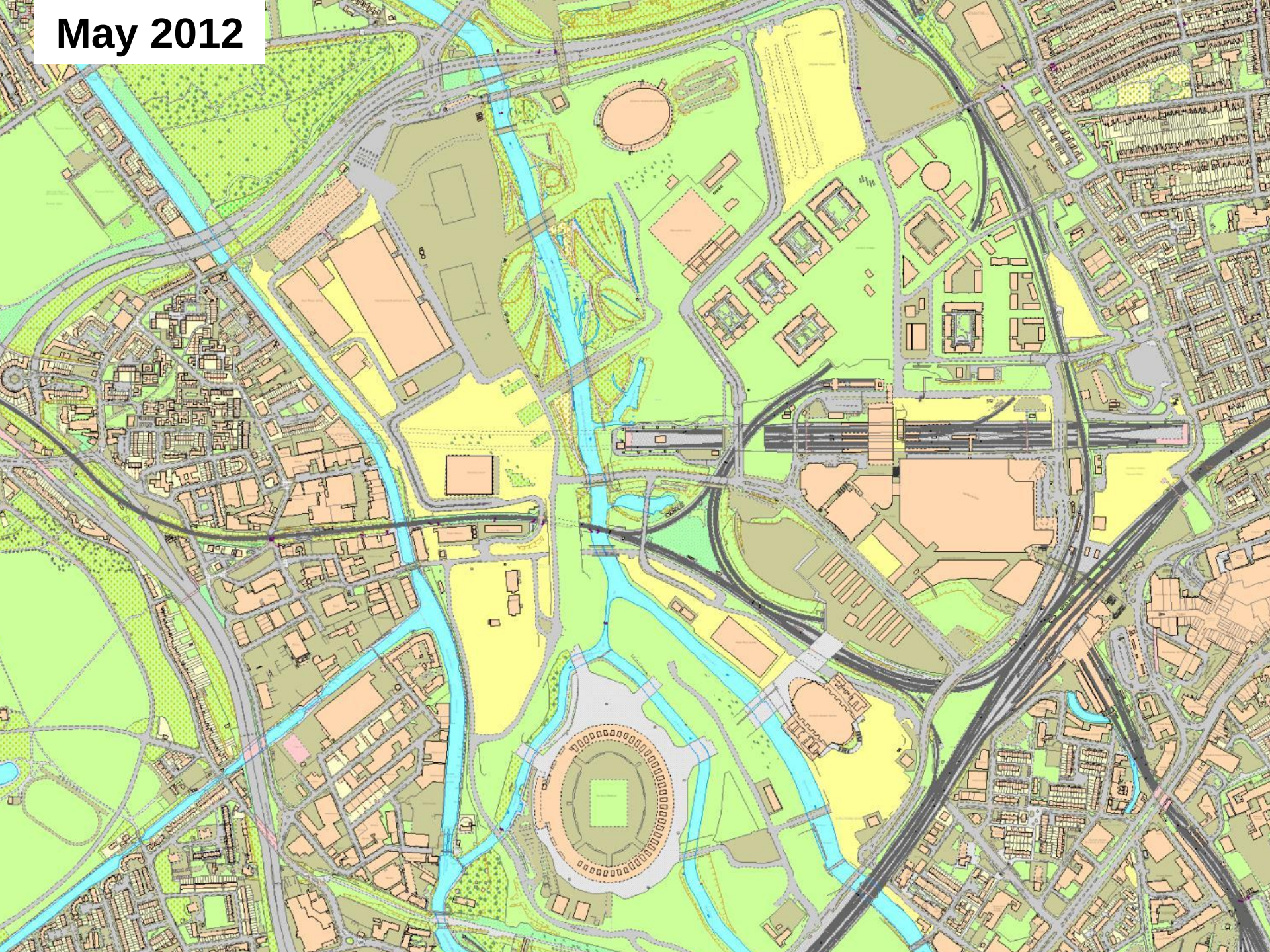
August 2001

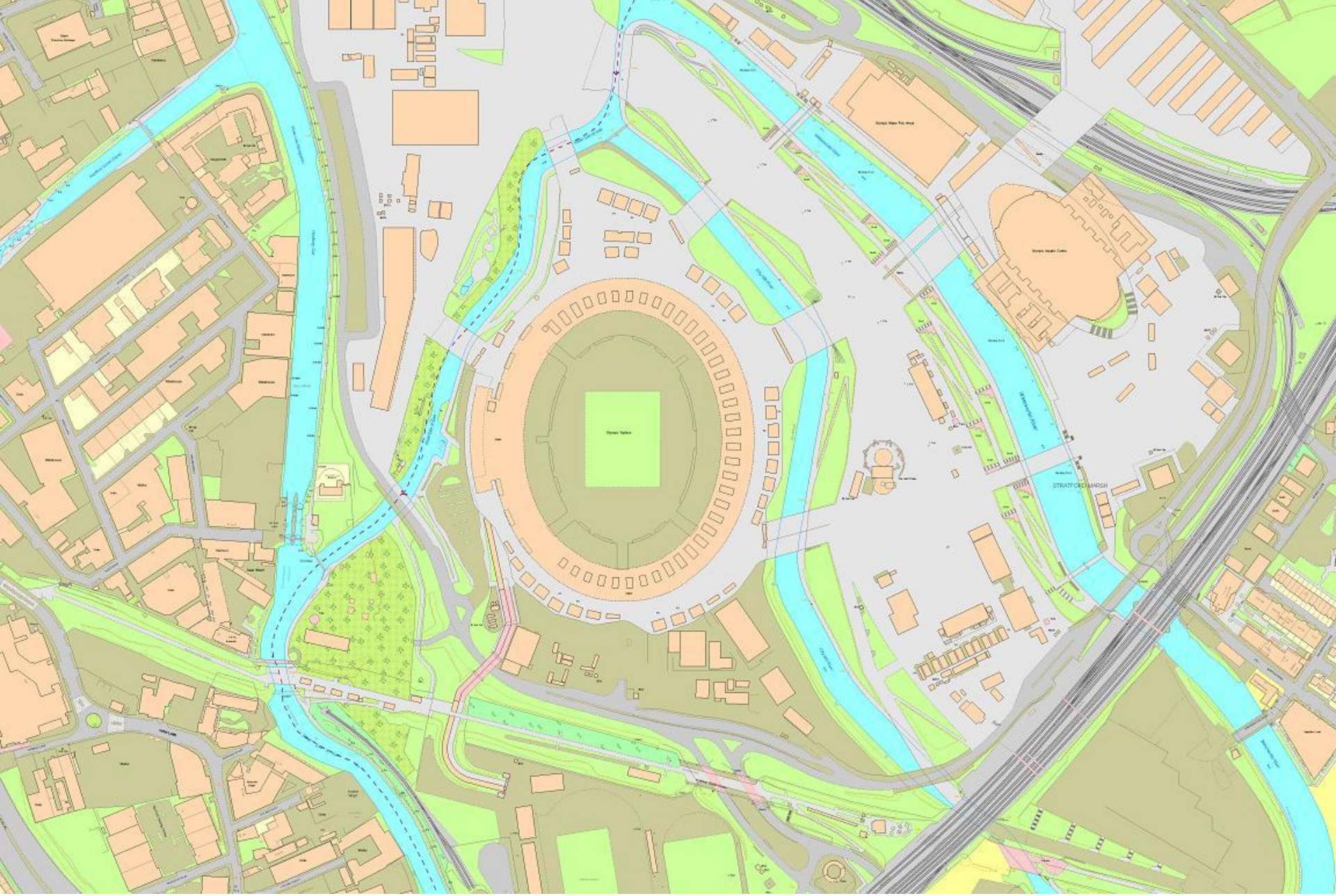
March 2012




Olympic Park 30 June 2012
<4cm GSD

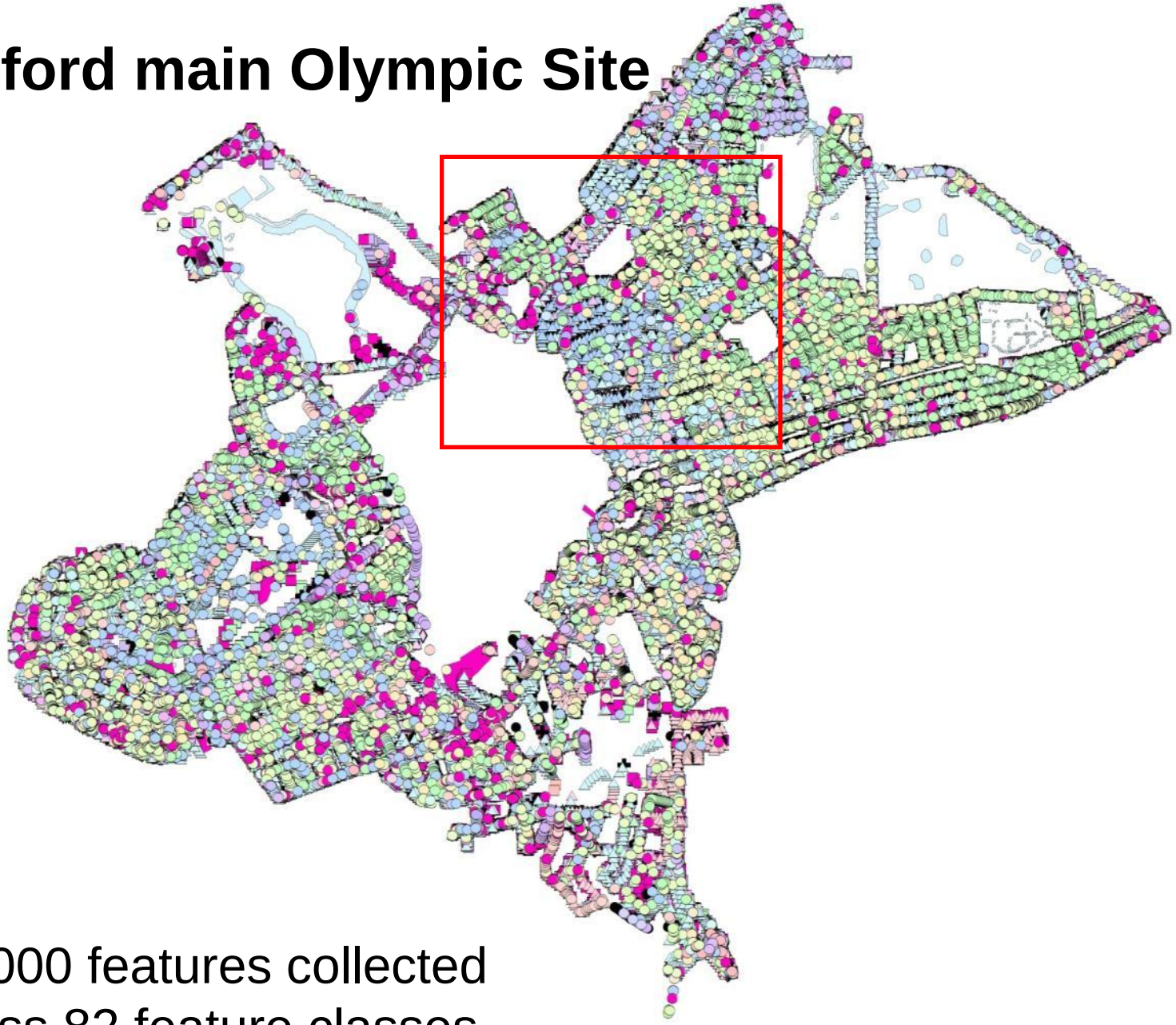

October 2004


May 2012

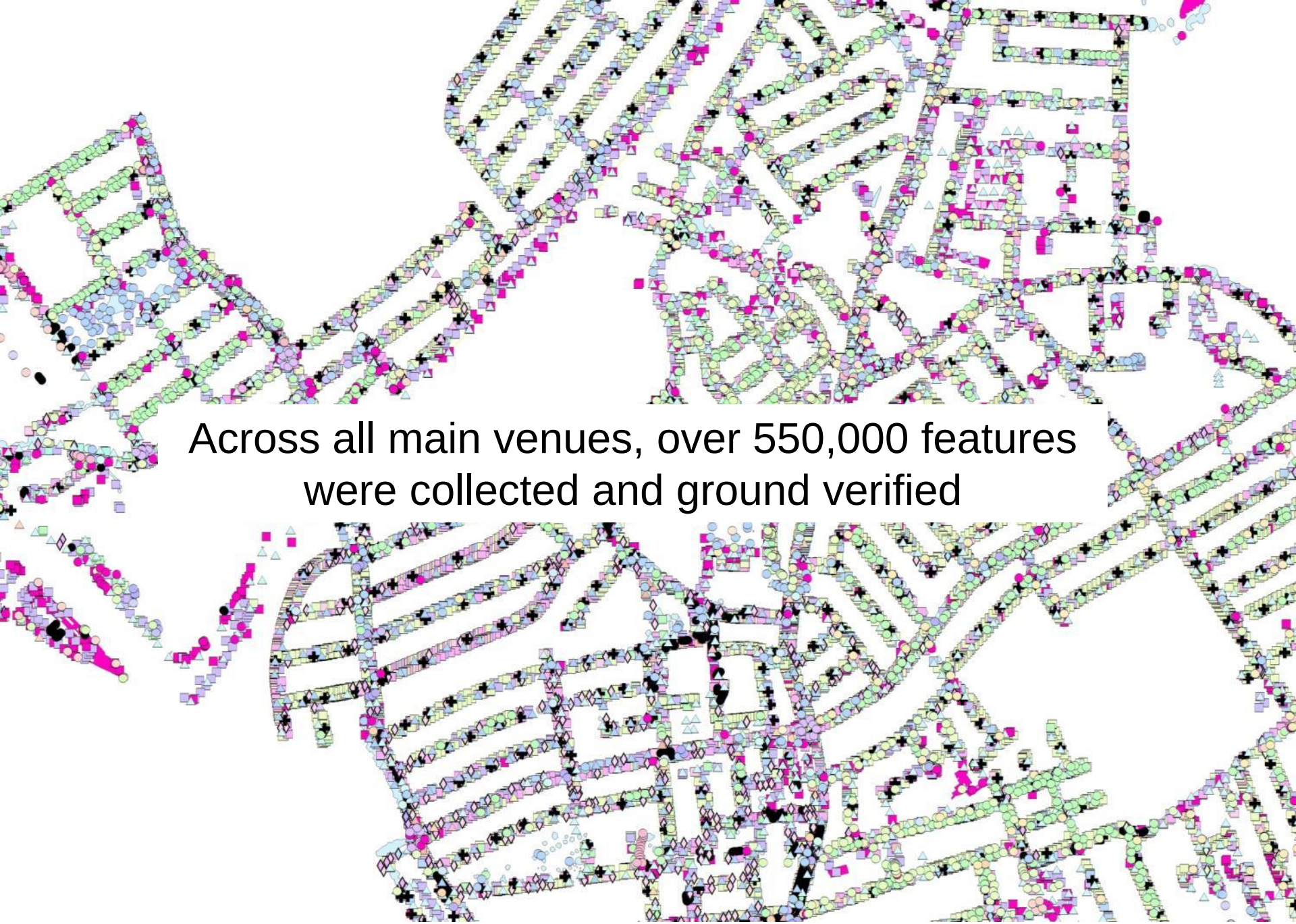


As at 29th June 2012

Stratford main Olympic Site



157,000 features collected
across 82 feature classes

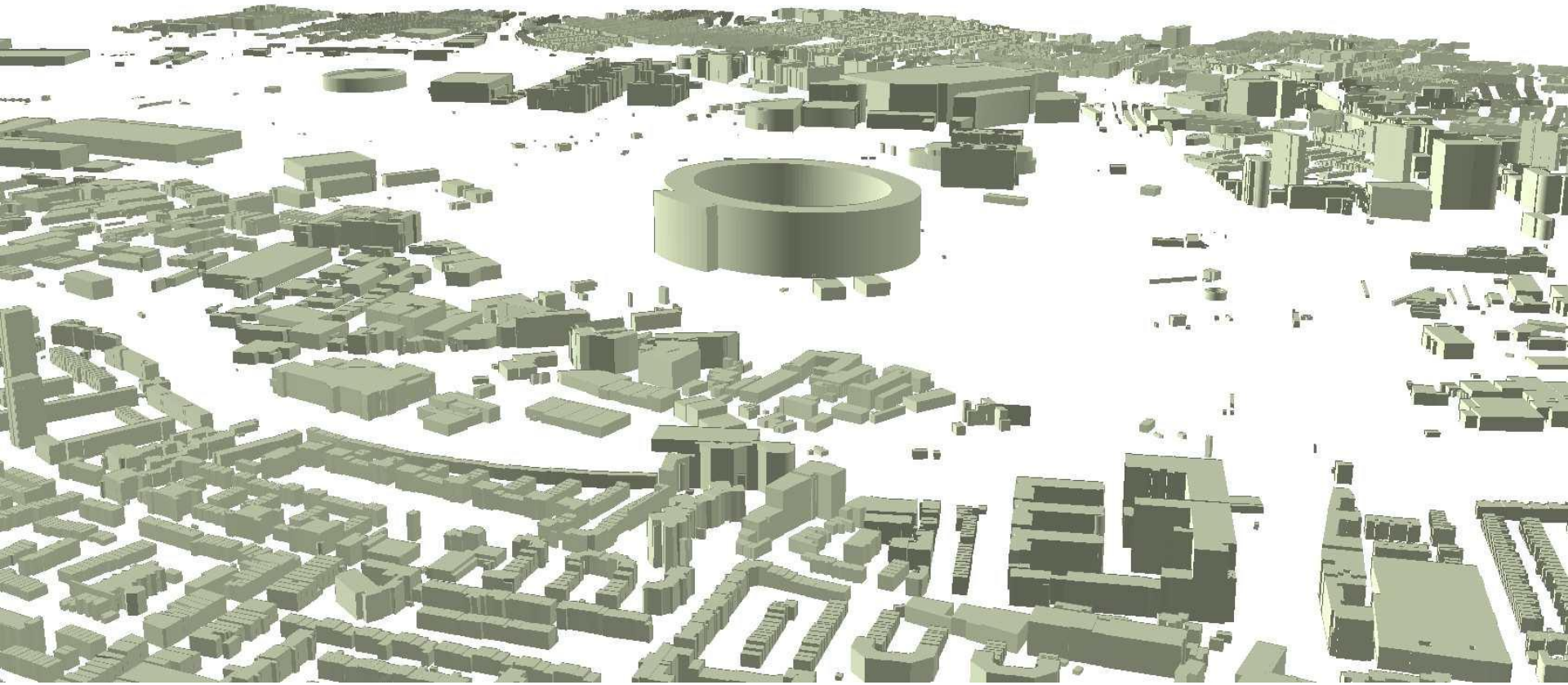


Across all main venues, over 550,000 features were collected and ground verified


Mews
El Sub Sta
OLD FORD ROAD
12.4m
PH
Dethick
Court
FORD STREET

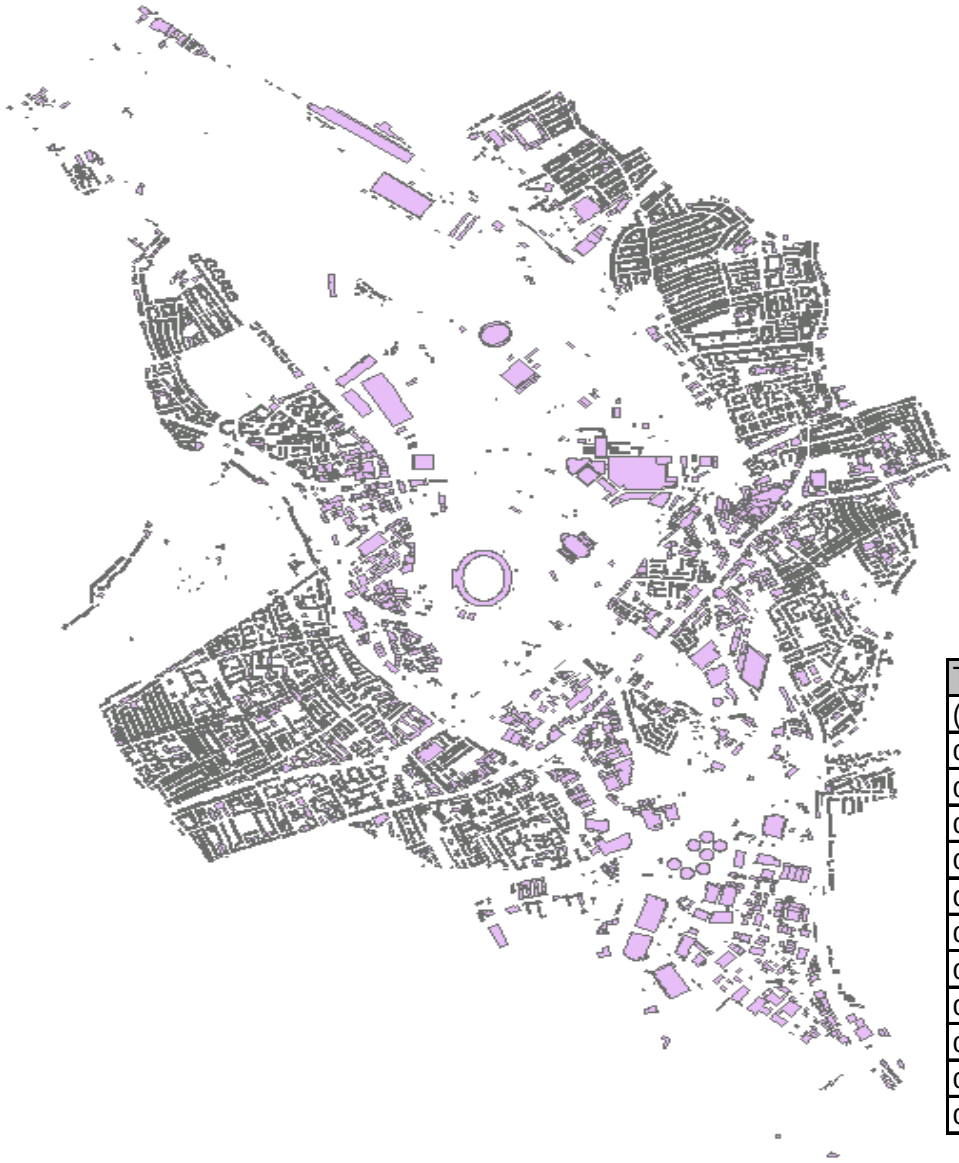
Street furniture coverage around Lords Cricket Ground

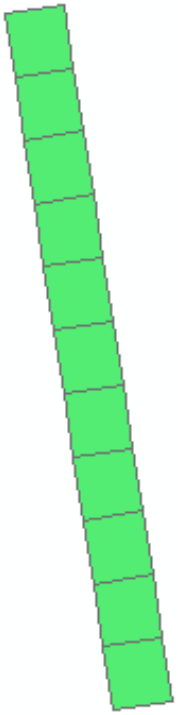
Enabling the third dimension



- Simple Building Heights were automatically generated using in-house developed software processing a combination of OS MasterMap Topo and High Resolution Imagery

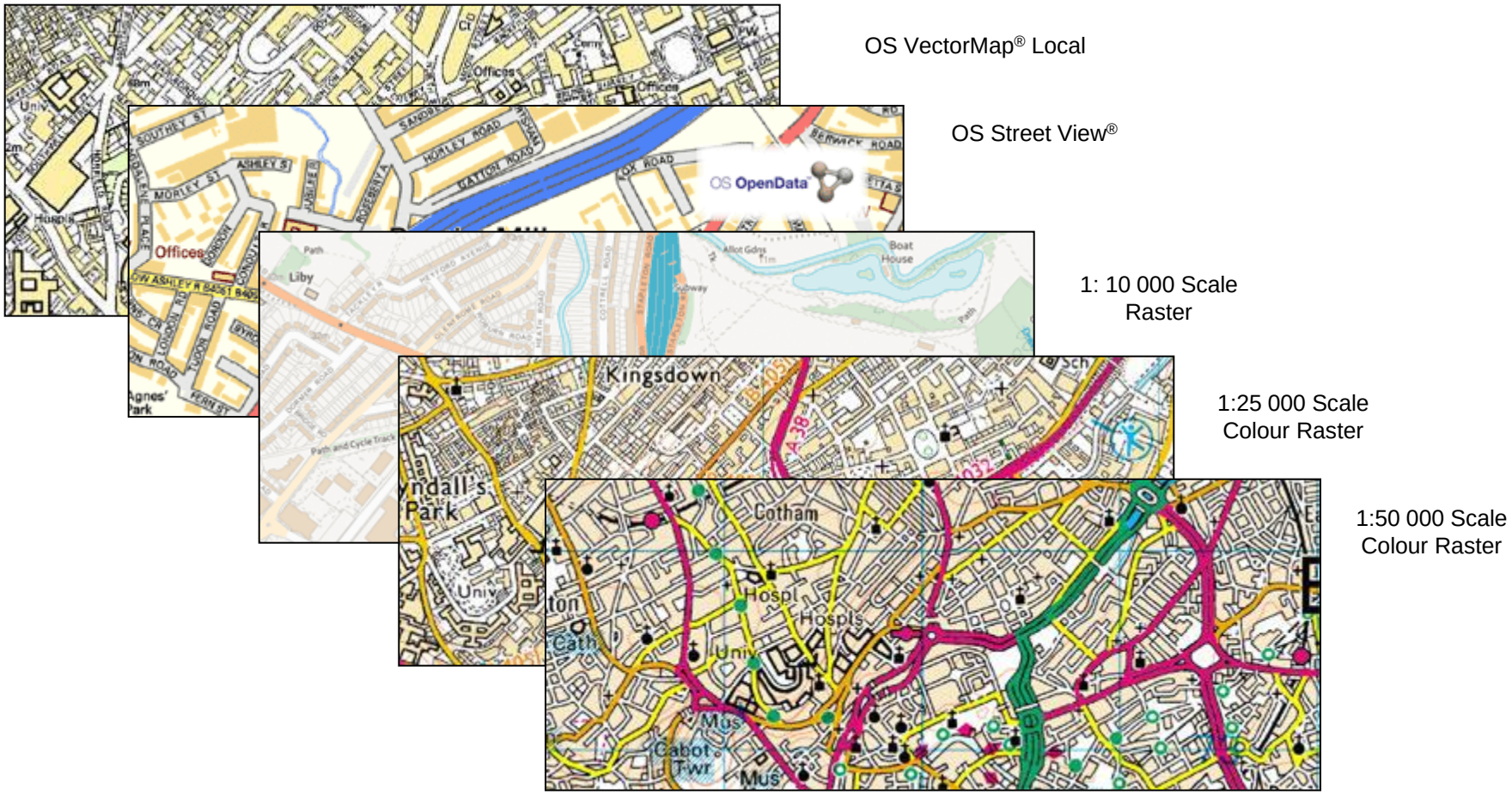
Simple Building Heights





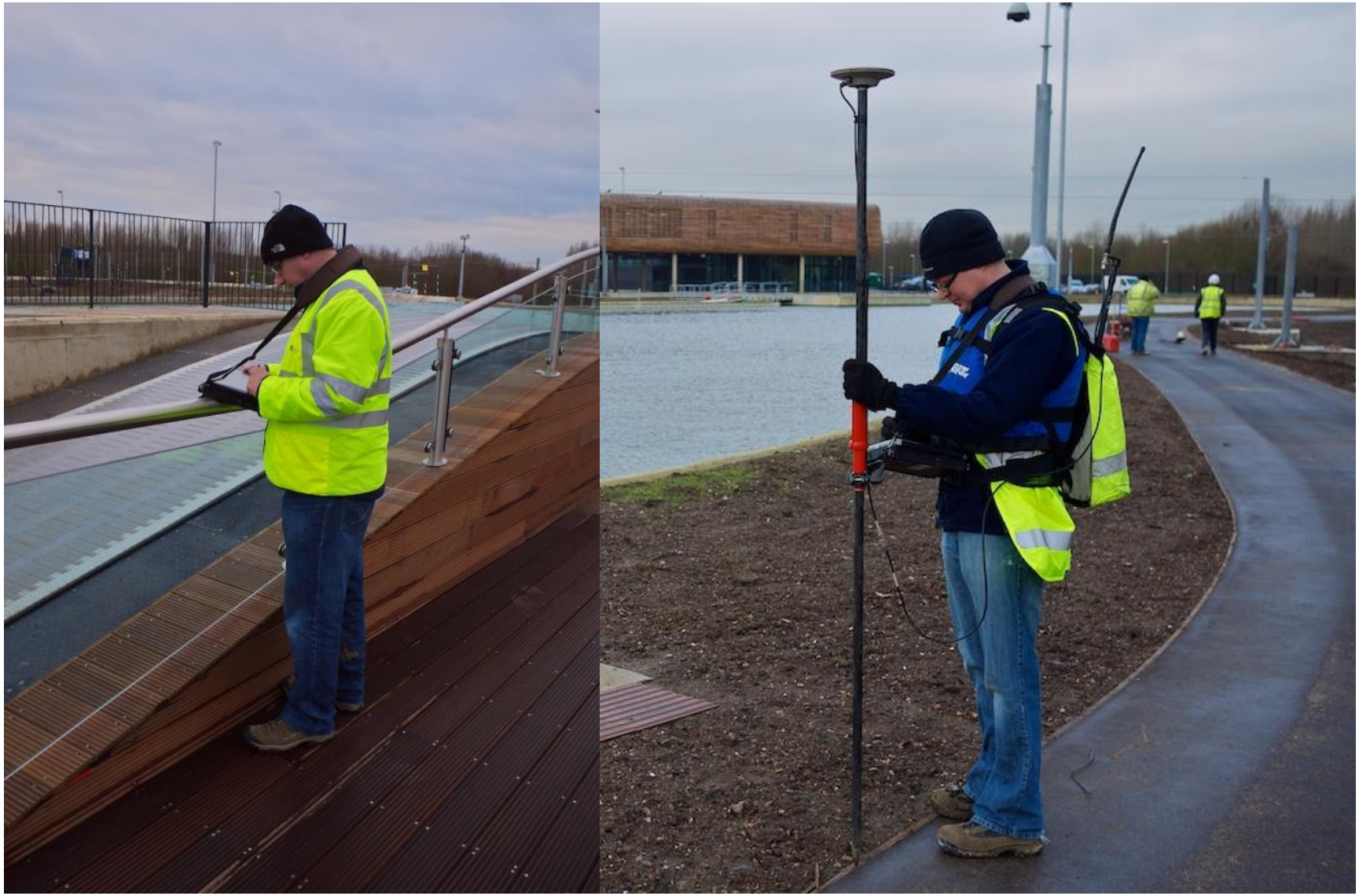
TOID	Ex. Ground Min	Ex. Roof Min	Ex. Roof Max
(north to south)			
osgb1000006617715	9.7	13.61	15.62
osgb1000006617716	9.7	13.15	14.98
osgb1000006617717	9.69	12.91	14.92
osgb1000006617718	9.69	12.81	14.92
osgb1000006617719	9.69	12.56	14.91
osgb1000006617720	9.74	12.74	14.91
osgb1000006617721	9.78	12.93	14.91
osgb1000006617722	9.92	13.2	15.14
osgb1000006617723	10.09	13.04	15.14
osgb1000006617724	10.26	13.35	15.06
osgb1000006617666	9.33	13.62	16.82

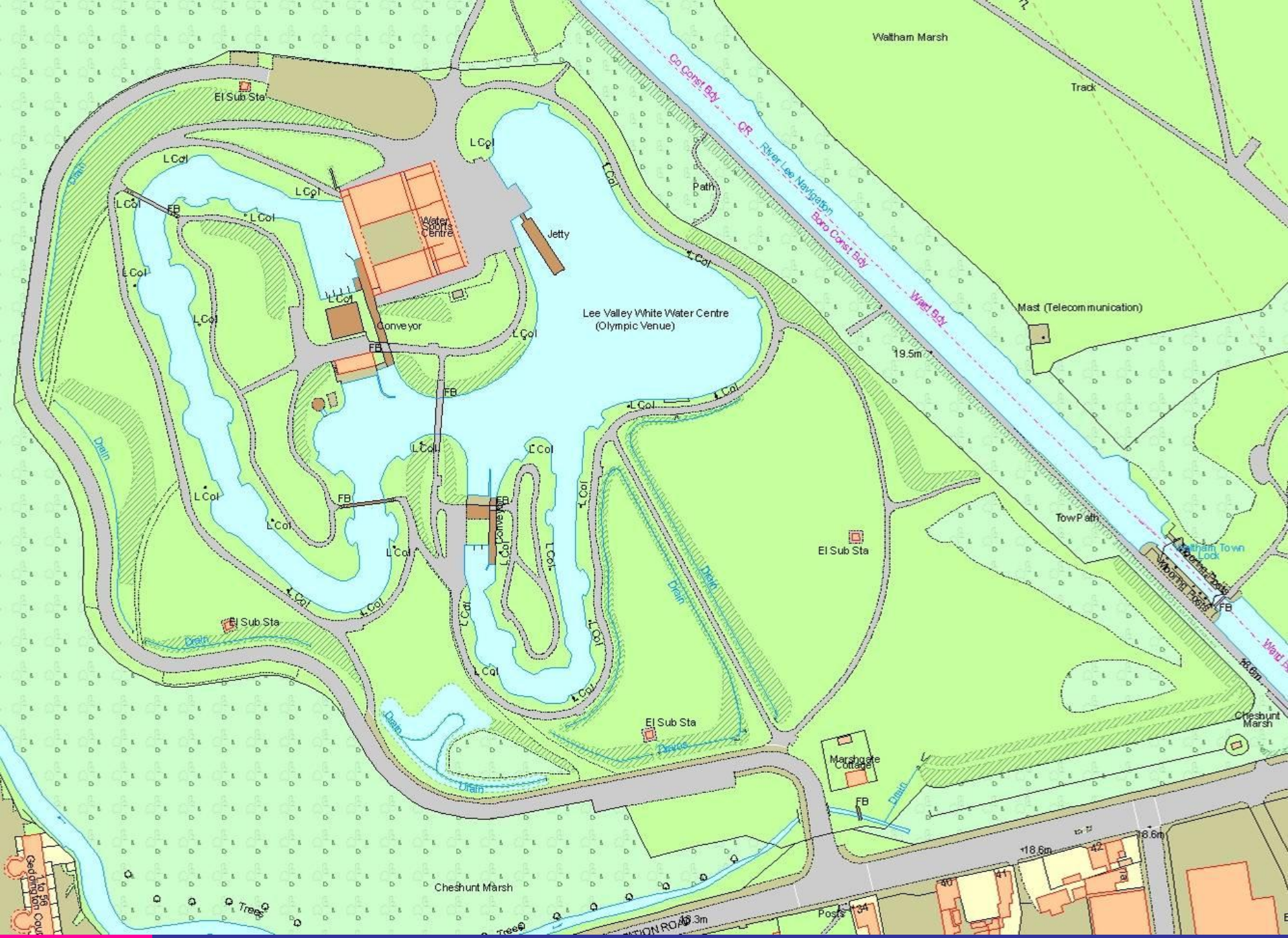
Derived data: synchronisation of five key products

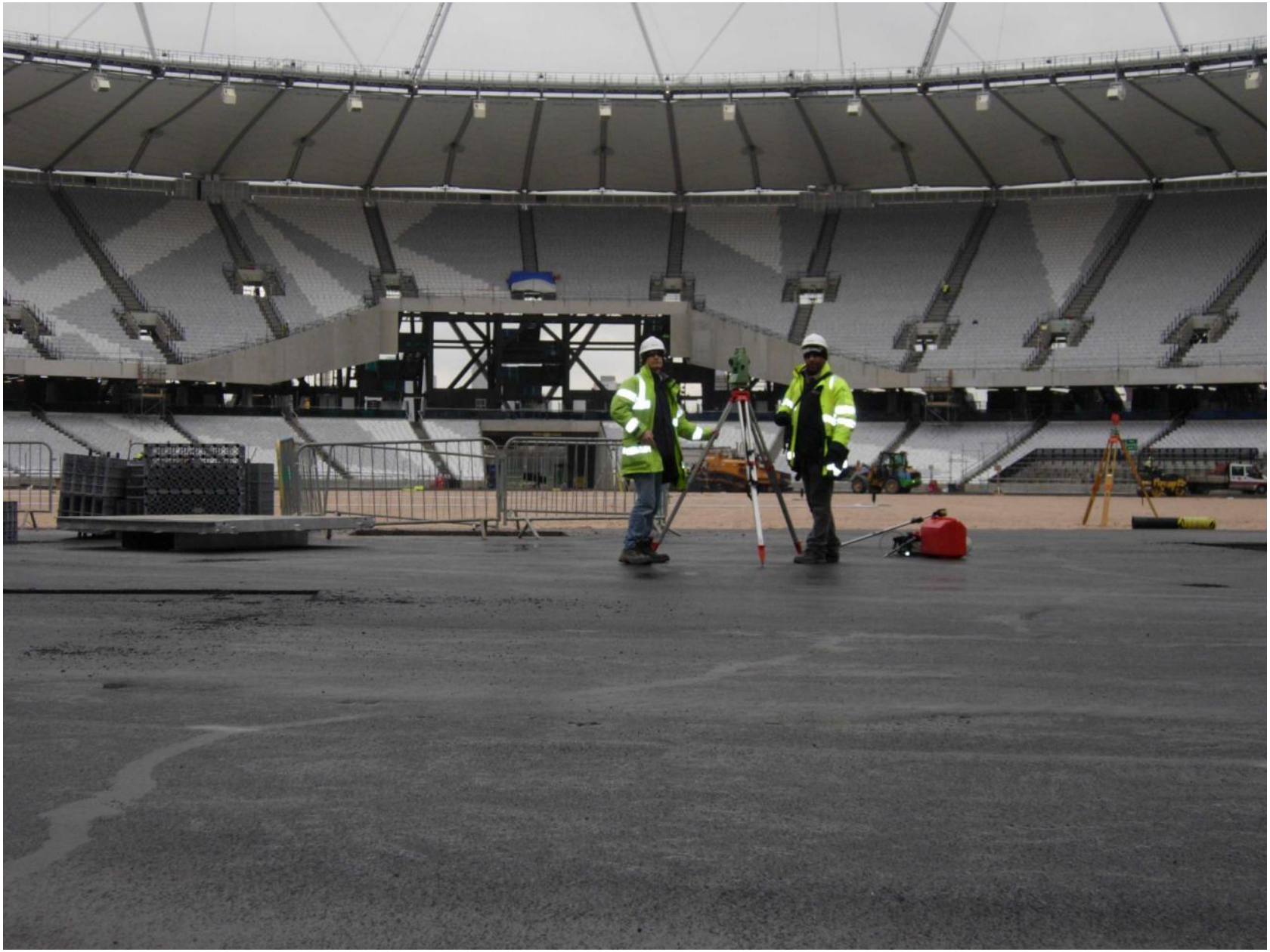


Lee Valley White Water Centre

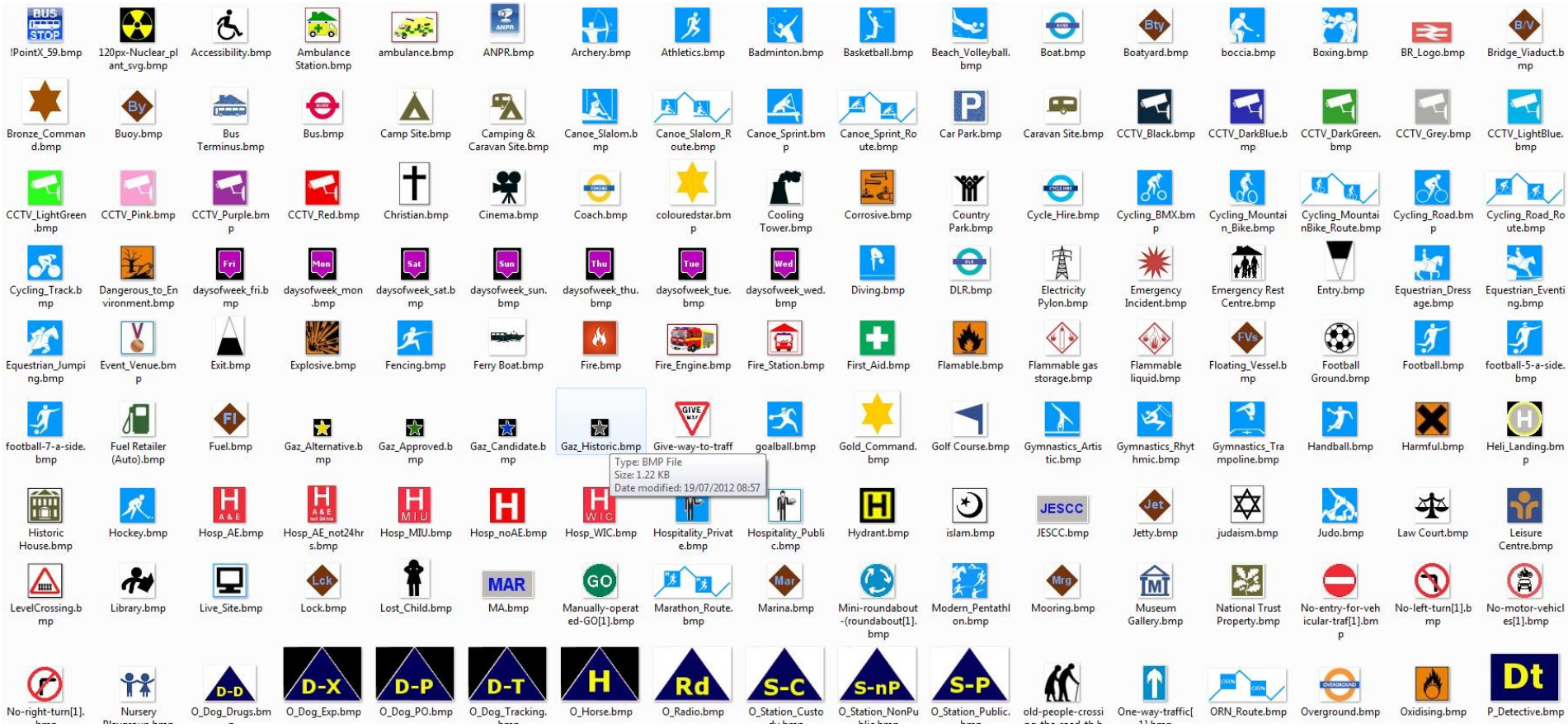
A combination of remote-sensed capture and field completion




Waltham Marsh
Track
El Sub Sta
Co Const Bdy
CR
River Lee Navigation
Bord Const Bdy
Ward Bdy
Path
Water Sports Centre
Jetty
Lee Valley White Water Centre (Olympic Venue)
Conveyor
Mast (Telecommunication)
19.5m
Tow Path
Waltham Town Lock
Drain
FB
L Col
Cheshunt Marsh
Marshgate Cottage
18.6m
Trees
Posts



Symbology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Accessibility.bmp
Ambulance Station.bmp
ambulance.bmp
ANPR.bmp
Archery.bmp
Athletics.bmp
Badminton.bmp
Basketball.bmp
Beach_Volleyball.bmp
Boat.bmp
Boatyard.bmp
boccia.bmp
Boxing.bmp
BR_Logo.bmp
Bridge_Viaduct.bmp
Bronze_Command.bmp
Buoy.bmp
Bus Terminus.bmp
Bus.bmp
Camp Site.bmp
Camping & Caravan Site.bmp
Canoe_Slalom.bmp
Canoe_Slalom_Route.bmp
Canoe_Sprint.bmp
Canoe_Sprint_Route.bmp
Car Park.bmp
Caravan Site.bmp
CCTV_Black.bmp
CCTV_DarkBlue.bmp
CCTV_DarkGreen.bmp
CCTV_Grey.bmp
CCTV_LightBlue.bmp
CCTV_LightGreen.bmp
CCTV_Pink.bmp
CCTV_Purple.bmp
CCTV_Red.bmp
Christian.bmp
Cinema.bmp
Coach.bmp
colouredstar.bmp
Cooling Tower.bmp
Corrosive.bmp
Country Park.bmp
Cycle_Hire.bmp
Cycling_BMX.bmp
Cycling_Mountain_Bike.bmp
Cycling_MountainBike_Route.bmp
Cycling_Road.bmp
Cycling_Road_Route.bmp
Cycling_Track.bmp
Dangerous_to_Environment.bmp
daysofweek_fri.bmp
daysofweek_mon.bmp
daysofweek_sat.bmp
daysofweek_sun.bmp
daysofweek_thu.bmp
daysofweek_tue.bmp
daysofweek_wed.bmp
Diving.bmp
DLR.bmp
Electricity Pylon.bmp
Emergency Incident.bmp
Emergency Rest Centre.bmp
Entry.bmp
Equestrian_Dressage.bmp
Equestrian_Eventing.bmp
Equestrian_Jumping.bmp
Event_Venue.bmp
Exit.bmp
Explosive.bmp
Fencing.bmp
Ferry Boat.bmp
Fire.bmp
Fire_Engine.bmp
Fire_Station.bmp
First_Aid.bmp
Flamable.bmp
Flammable gas storage.bmp
Flammable liquid.bmp
Floating_Vessel.bmp
Football Ground.bmp
Football.bmp
football-5-a-side.bmp
football-7-a-side.bmp
Fuel Retailer (Auto).bmp
Fuel.bmp
Gaz_Alternative.bmp
Gaz_Approved.bmp
Gaz_Candidate.bmp
Gaz_Historic.bmp
Give-way-to-traff
goalball.bmp
Gold_Command.bmp
Golf Course.bmp
Gymnastics_Artistic.bmp
Gymnastics_Rhythmic.bmp
Gymnastics_Trampoline.bmp
Handball.bmp
Harmful.bmp
Heli_Landing.bmp
Historic House.bmp
Hockey.bmp
Hosp_AE.bmp
Hosp_AE_not24hrs.bmp
Hosp_MIU.bmp
Hosp_noAE.bmp
Hosp_WIC.bmp
Hospitality_Private.bmp
Hospitality_Public.bmp
Hydrant.bmp
islam.bmp
JESCC.bmp
Jetty.bmp
judaism.bmp
Judo.bmp
Law Court.bmp
Leisure Centre.bmp
LevelCrossing.bmp
Library.bmp
Live_Site.bmp
Lock.bmp
Lost_Child.bmp
MA.bmp
Manually-operated-GO[1].bmp
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Marina.bmp
Mini-roundabout-(roundabout[1].bmp
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Mooring.bmp
Museum Gallery.bmp
National Trust Property.bmp
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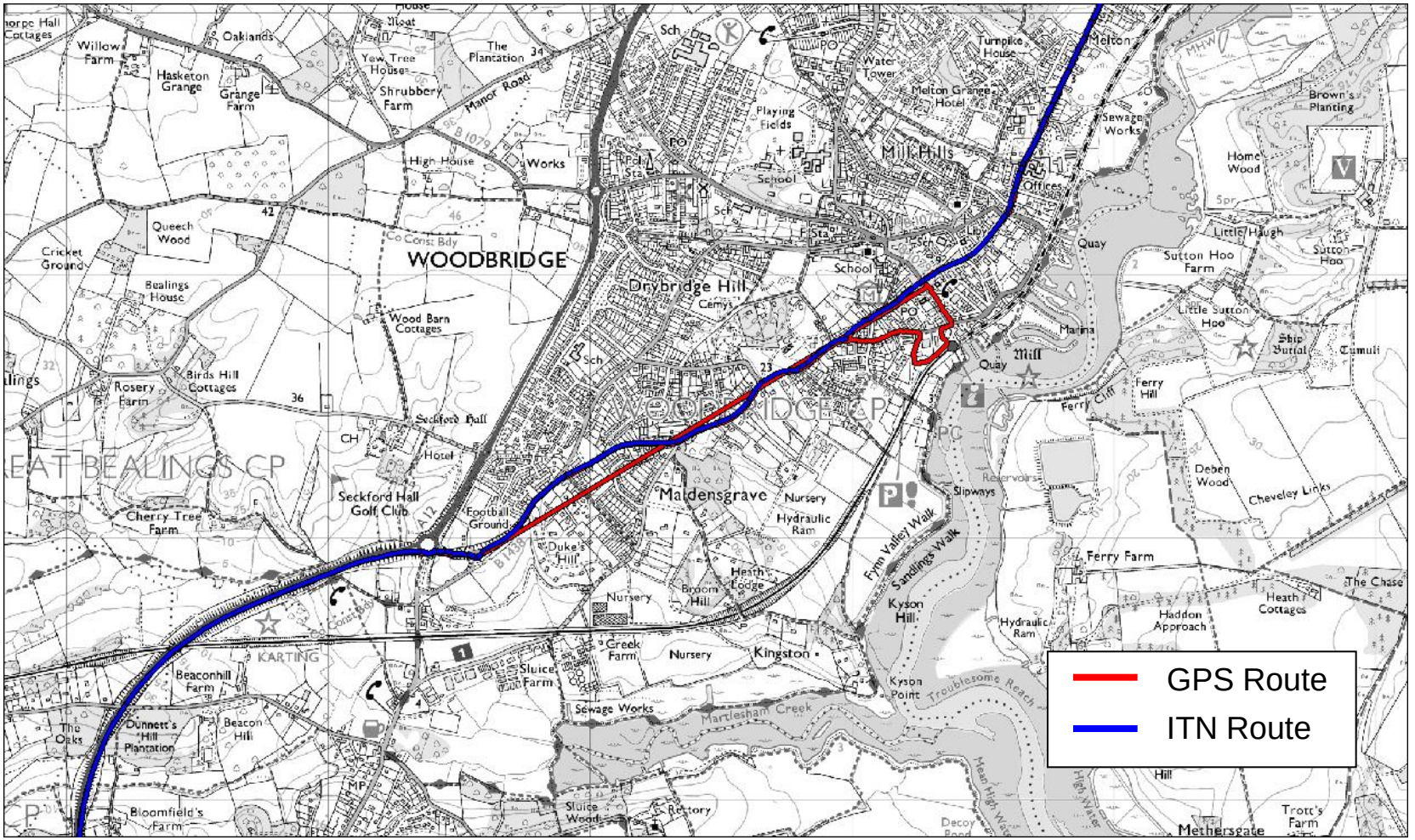
No-motor-vehicles[1].bmp
No-right-turn[1].
Nursery
O_Dog_Drugs.bm
O_Dog_Exp.bmp
O_Dog_PO.bmp
O_Dog_Tracking.
O_Horse.bmp
O_Radio.bmp
O_Station_Custo
O_Station_NonPu
O_Station_Public.
old-people-crossi
One-way-traffic[
ORN_Route.bmp
Overground.bmp
Oxidising.bmp
P_Detective.bmp
Type: BMP File
Size: 1.22 KB
Date modified: 19/07/2012 08:57

Olympic Torch Relay Route –
GPS data cleaning and matching to OS MasterMap ITN Layer



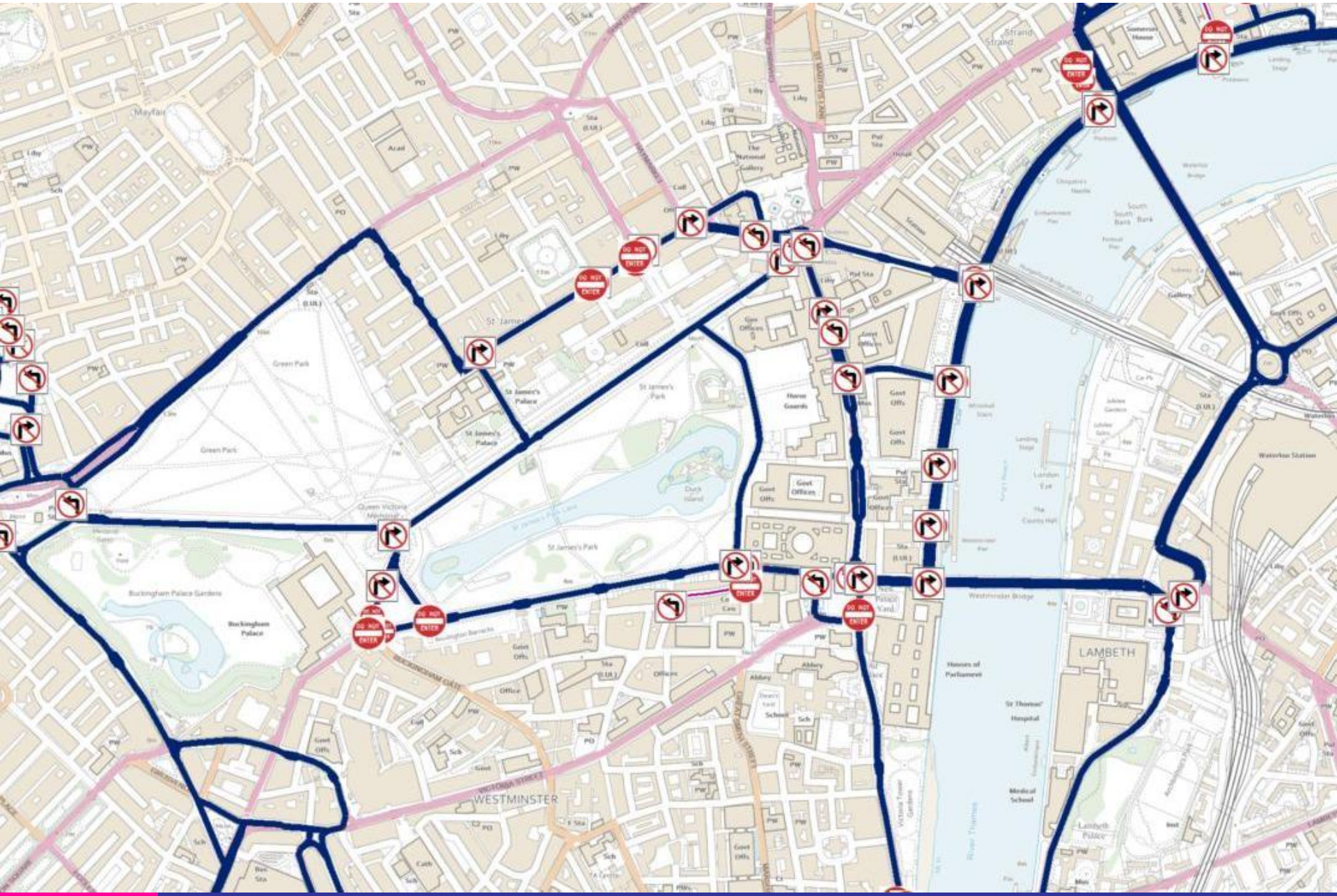
Olympic torch relay route – GPS data matched to ITN

- GPS Attribution:
- ID: Day 48
- Route: Norwich to Ipswich

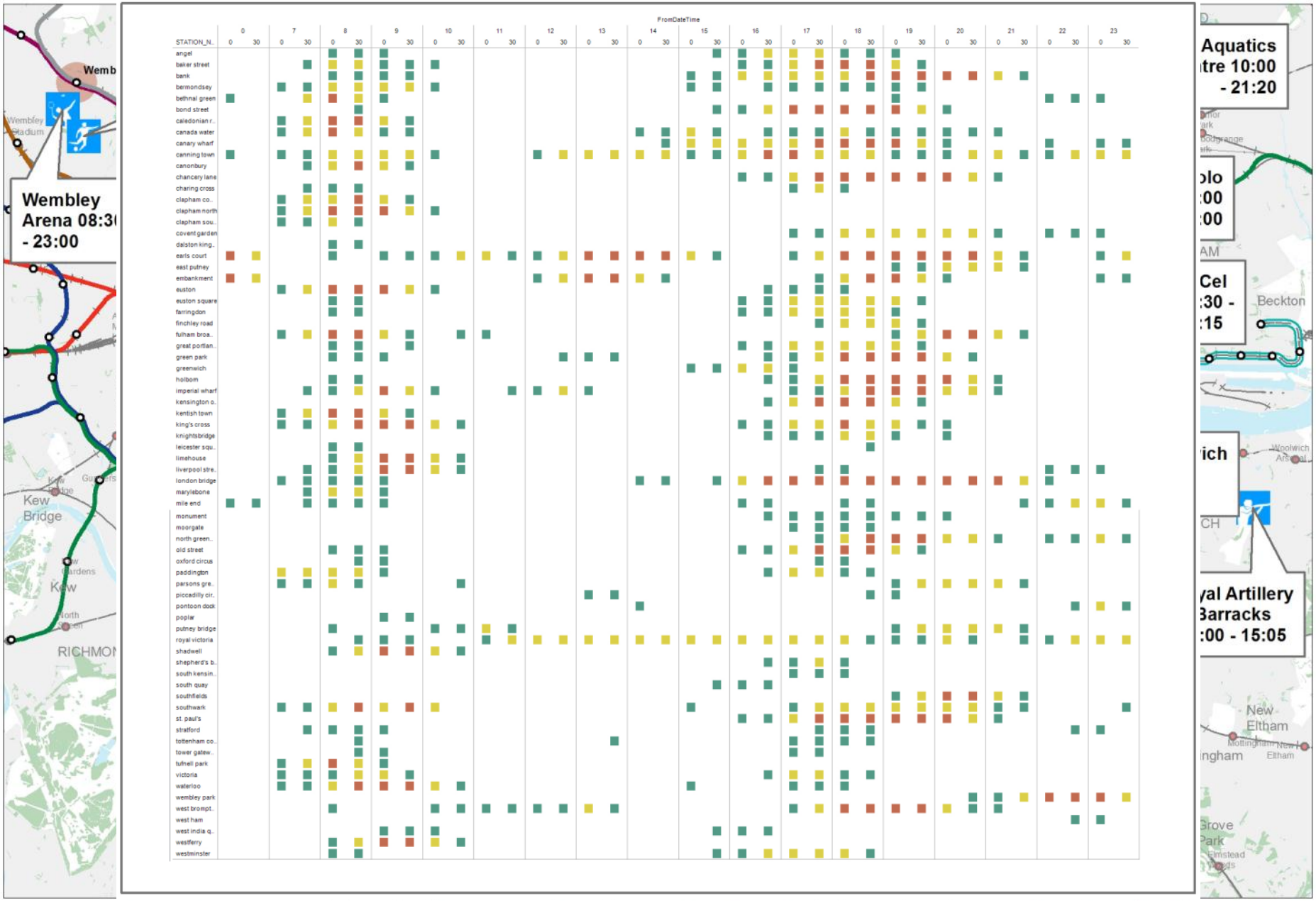
ITN Attribution:
For each ITN link which constitute the route…
ID: TOID
Descriptive Term: B Road
Road Name: IPSWICH ROAD
DfT Number: B1438
Nature of Road: Single Carriageway
Length: 442.95m
Start Node: 4000000029211768
End Node: 4000000029211751
Last Change Date: 25/03/2009
Reason for Change: Modified

Olympic Route Network (ORN) analysis

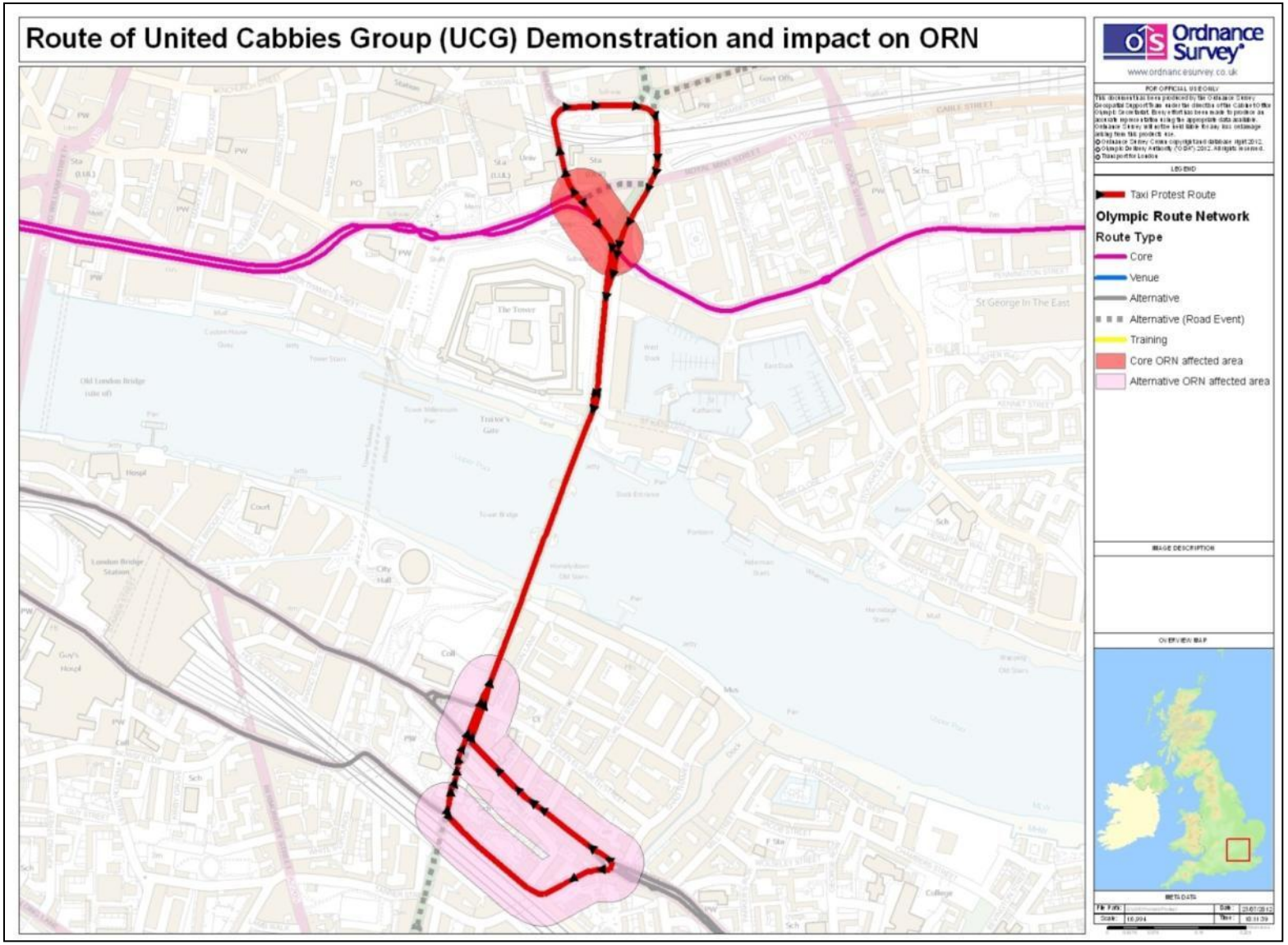
Olympic Route Network (ORN) analysis



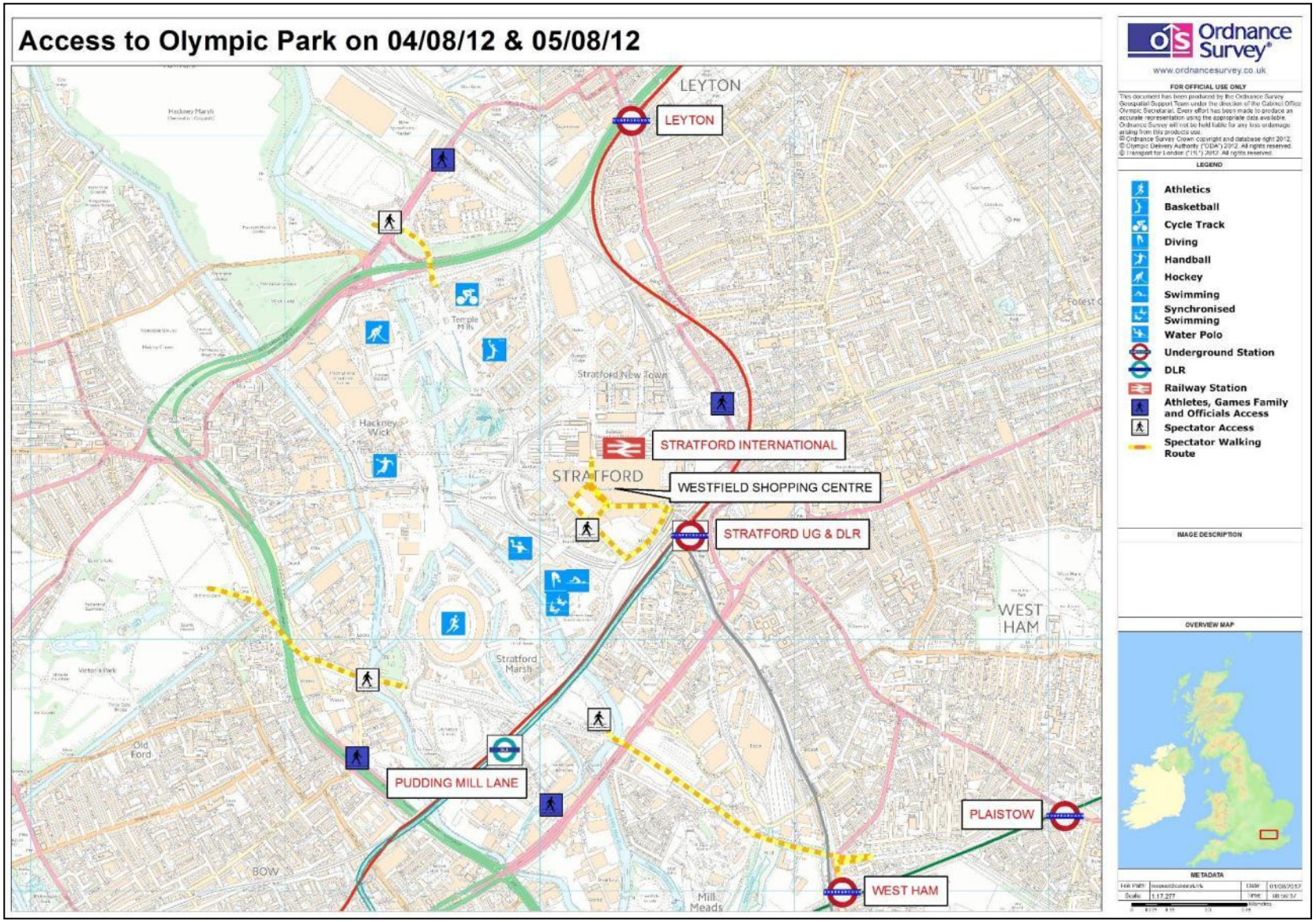
Daily product – rail transport waiting times



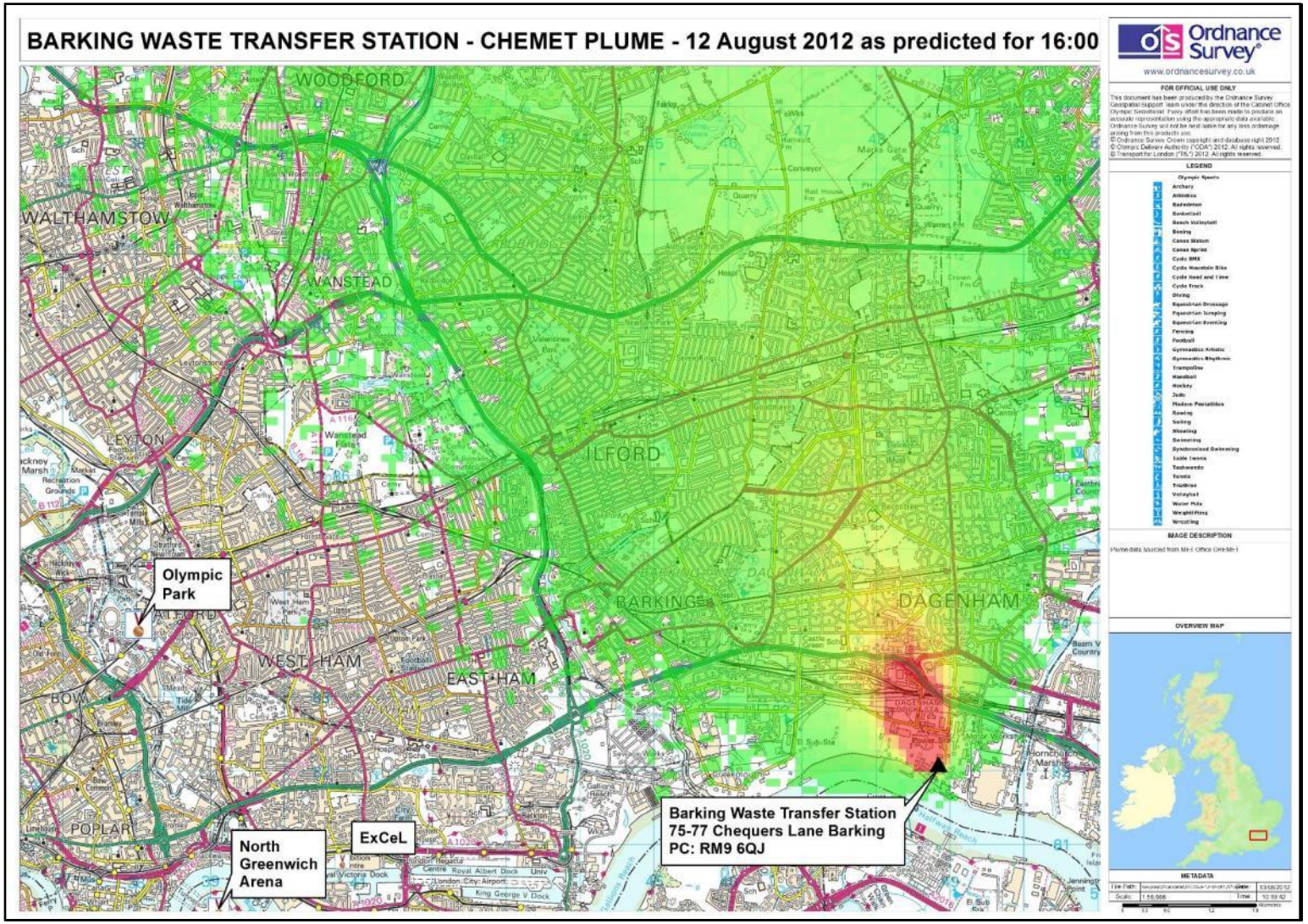
Protest routes and potential impact on Olympic Route Network



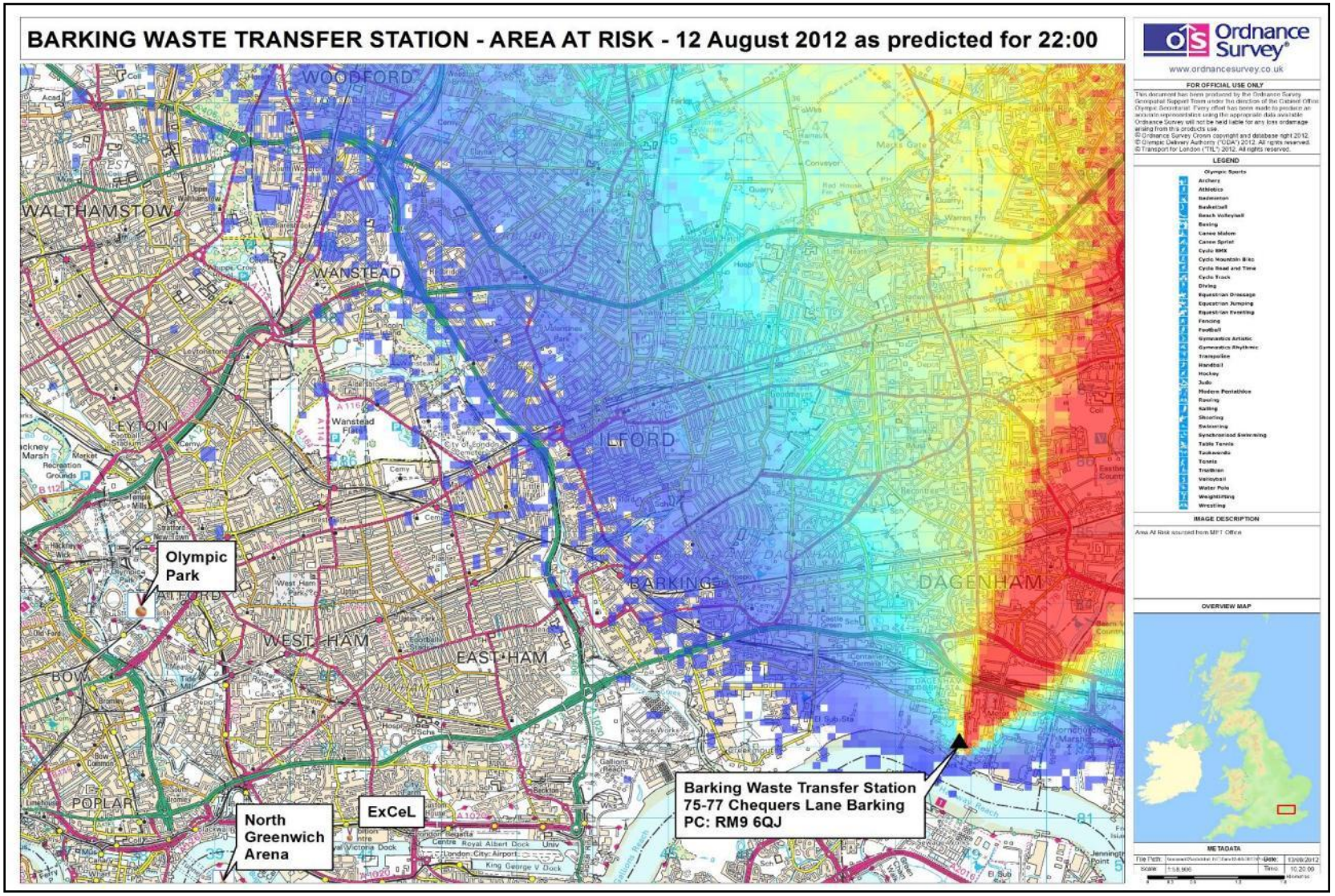
Crowd management at Westfield Shopping Centre



Plume impact of major fire in East London – time series



Area at risk due to major fire in East London – time series



Location matters

- *'We believe a lot of poverty has to do with the poverty of information…if we can democratise our information we can radicalise our democracy.'* Adviser to the Prime Minister of India

- White House memo: *'Various federal programs can function more effectively if they include well-focused, place-based strategies.'*

- *'Effective policy depends on good information…it is vital to understand not just what is happening, but also where it is happening.'* President of the European Council

A Global Geospatial Mandate

At its 47th plenary in July 2011, ECOSOC, recognizing the importance of global geospatial information, established the Committee of Experts on Global Geospatial Information Management (UN-GGIM), and:

- Requested the Committee to present to ECOSOC in 2016 a comprehensive review of all aspects of its work and operations, in order to allow Member States to assess its effectiveness.
- Encouraged Member States to hold regular high-level, multi-stakeholder discussions on global geospatial information, including through the convening of global forums, with a view to promoting a comprehensive dialogue with all relevant actors and bodies.

Resolution

2011/24
Committee of Experts on Global Geospatial Information Management

The Economic and Social Council,

1. *Takes note* of the report of the Secretary-General on global geospatial information management[3] and the recommendations contained therein;

2. *Recognizes* the need to promote international cooperation in the field of global geospatial information;

3. *Decides*, in this regard, to establish the Committee of Experts on Global Geospatial Information Management, in accordance with the terms of reference contained in the annex to the present resolution, to be established and administered within existing resources and organized accordingly, and requests the Committee to present to the Economic and Social Council in 2016 a comprehensive review of all aspects of its work and operations, in order to allow Member States to assess its effectiveness;

4. *Encourages* Member States to hold regular high-level, multi-stakeholder discussions on global geospatial information, including through the convening of global forums, with a view to promoting a comprehensive dialogue with all relevant actors and bodies;

5. *Emphasizes* the importance of promoting national, regional and global efforts to foster the exchange of knowledge and expertise, to assist developing countries in building and strengthening national capacities in this field.

47th plenary meeting
27 July 2011

The United Nations steps forward: Global Geospatial Information Management

"There is a significant gap in the management of geospatial information globally"

Paul Cheung, Director, United Nations Statistics Division,
Cambridge Conference June 2011

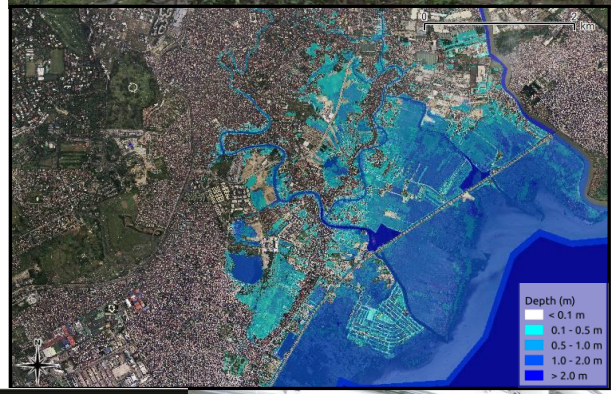
UN-GGIM: A global initiative

Formal inter-governmental UN Committee of Experts to:

- Discuss, enhance and coordinate Global Geospatial Information Management activities by **involving Member States** at the highest level. Reports to ECOSOC
- Make joint decisions and set directions on the use of geospatial information within national and global policy frameworks
- Work with Governments to improve policy, institutional arrangements, and legal frameworks
- Address global issues and contribute collective knowledge as a community with shared interests and concerns
- Develop effective strategies to build geospatial capacity in developing countries

UN-GGIM: Why a global mechanism?

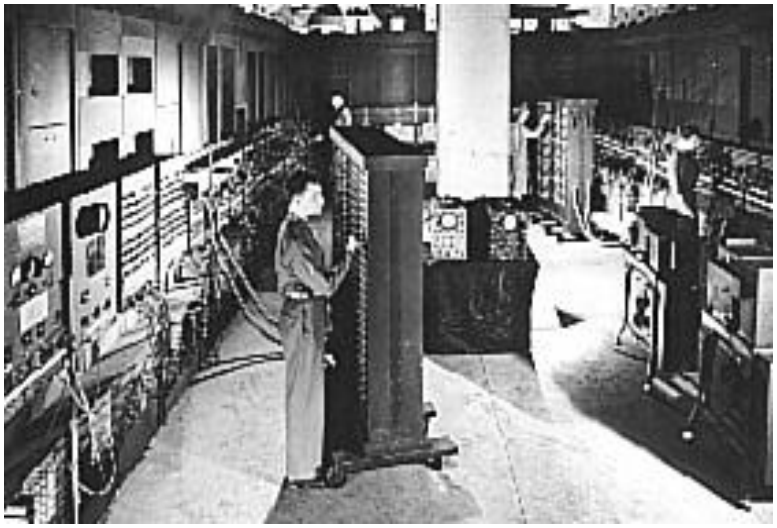
- Significant gap in the recognition and management of geospatial information globally
- Lack of a global consultative and decision-making mechanism among Member States in:
  - setting global norms on geospatial information;
  - developing common tools; and
  - bringing geospatial information to bear on global policy issues
- This gap is increasingly being filled by the private sector, reducing the role and influence of Governments
- Governments, not the private sector, have the mandate and accountability to maintain and deliver the national geospatial information base and related policy



Second Session of the Committee of Experts

"…building effective geospatial infrastructures and promoting greater use of geospatial information are part of a new frontier in harnessing science and technology for advancing sustainable development."

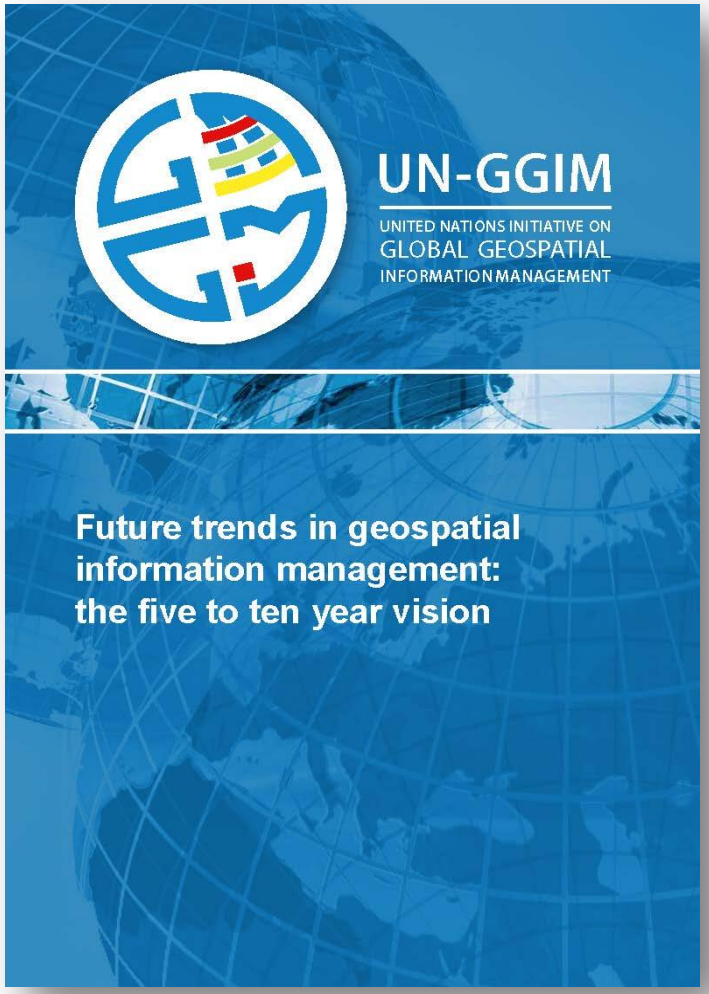
Wu Hongbo
Under-Secretary-General for Economic and Social Affairs
August 2012

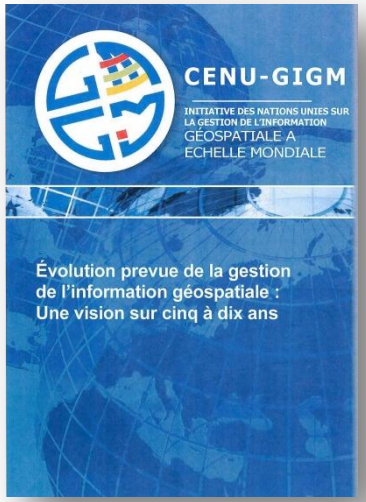


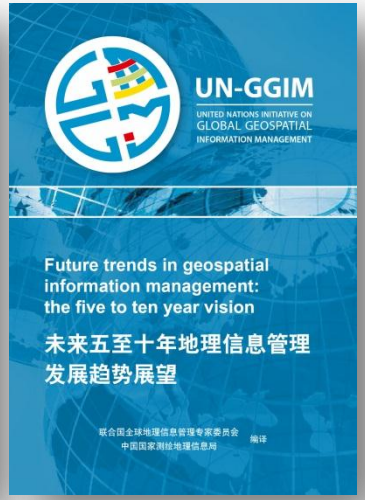
"In future computers may weigh less than 1.5 tons"
Popular Mechanics magazine 1949

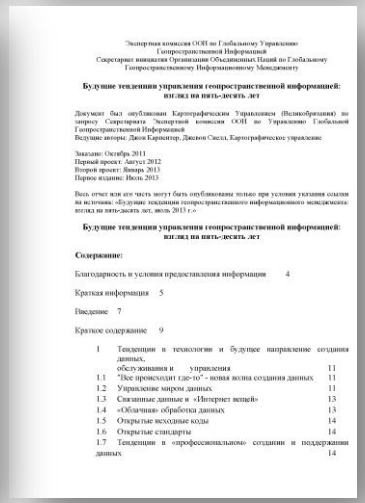
"640k RAM should be enough for anyone"
Bill Gates 1981

Future trends in geospatial information management: the 5-10 year vision









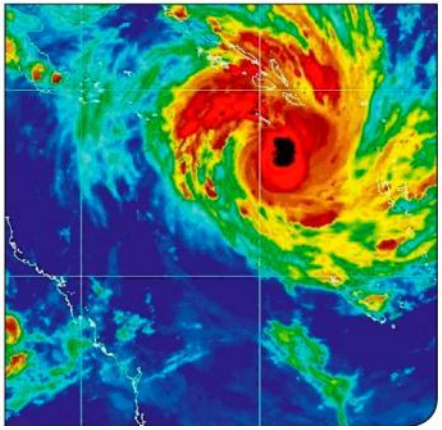
Five broad themes identified

- Trends in technology and the future direction of data creation, maintenance and management;
- Legal and policy developments;
- Skills requirements and training mechanisms;
- The role of the private sector and non-governmental sectors; and
- The future role of governments in data provision and management.

How can you measure and monitor sustainable development…





…without location and geography?

Geospatial Information: its importance to governments

"In Namibia a country in which water is a scarce resource…spatial data is only below water in significance"

Minister Alpheus G. !Naruseb, Minister of Lands and Resettlement, Namibia

"We envisage a dynamic Pacific if we can be assisted in implementing the UN-GGIM Resolutions for geospatial information. We need to put in place a solid framework from local to national then regional level"

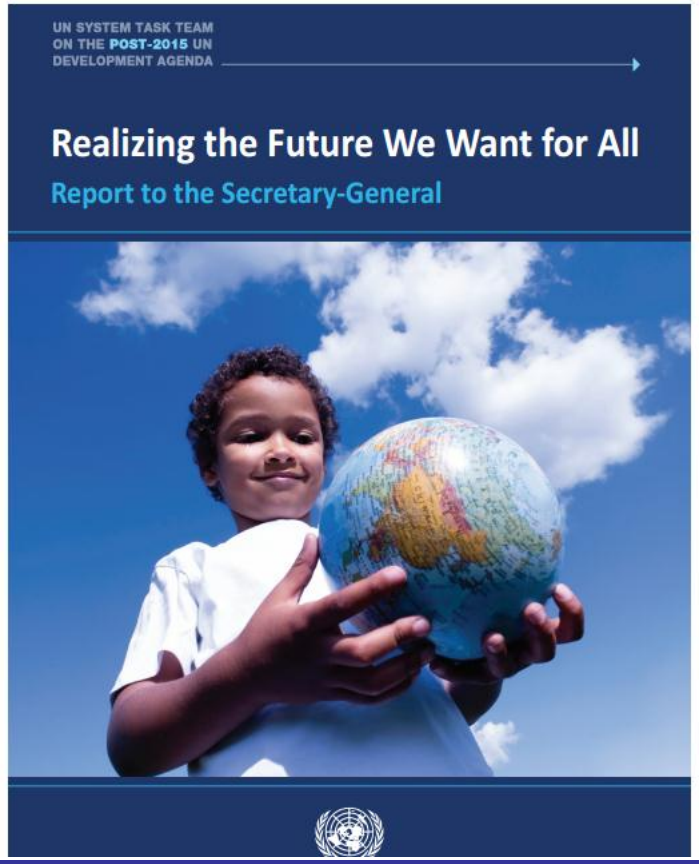
Tevita Boseiwaqa, Permanent Secretary for Lands and Mineral Resourses, Fiji

Realizing the Future We Want for All

The first report of the UN System Task Team on the Post-2015 UN Development Agenda to the Secretary-General in May 2012, *Realizing the Future We Want for All* outlined a vision for the post-2015 development.

Sets out four core dimensions where progress needs to be made:

- **Inclusive social development**: including empowering people through land tenure security
- **Environmental sustainability**: including improved land use planning
- **Inclusive economic development**: including ensuring access to land and natural resources
- **Peace and Security**



High Level Panel on the Post-2015 Development Agenda

"People are more likely to make long-term investments when they feel secure on their property. But when people or communities lack legal property rights they face the risk that they will be forced to leave their land. Business will also invest less and be less able to contribute to the economy. We know property rights are important, but also realise the challenges of measurement. We urge further work on this issue".

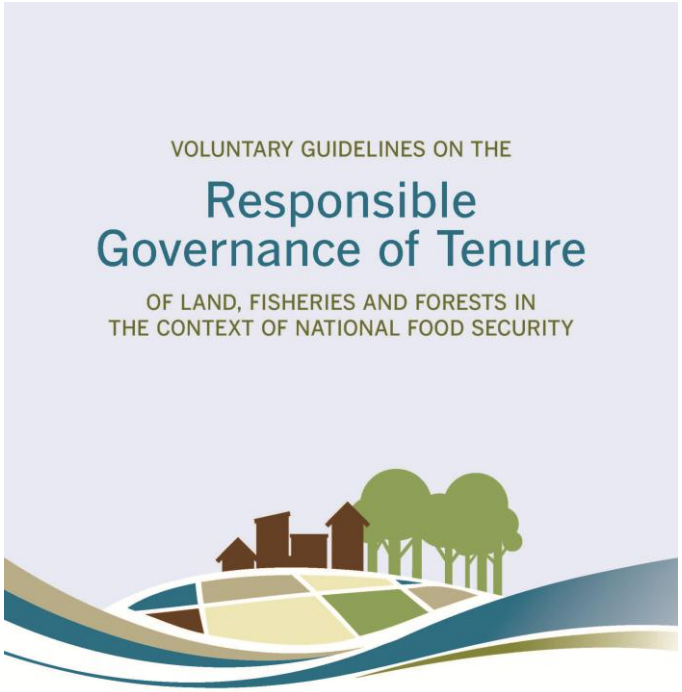
Land Tenure is recognised by the FAO as key to sustainable development

The FAO states explicitly that secure rights to land and greater equity in land access are important across a range of Millenium Development Goals (MDG) – specifically;

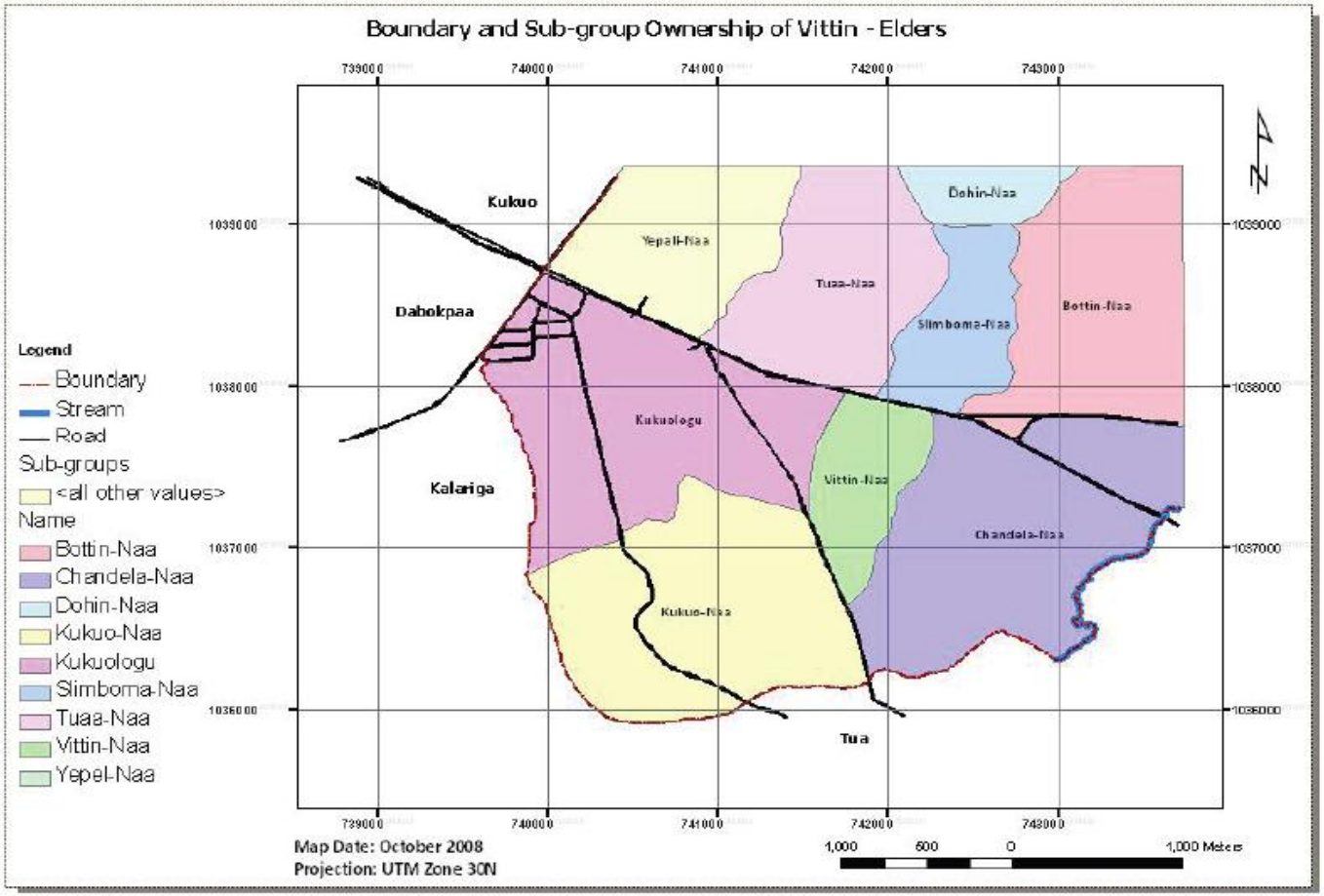
- ‘of great relevance to the attainment of MDG-1 for eradicating poverty and hunger.’
- ‘Land policies and agrarian reforms are of direct relevance to attainment of MDG-3 for gender equality and the empowerment of women,
- ‘MDG-7 for environmental sustainability’
- ‘MDG-8 for establishment of effective policy development’

Responsible Governance of Tenure

- The Guidelines promote responsible governance of tenure of land, fisheries and forests, with respect to all forms of tenure: public, private, communal, indigenous, customary, and informal
- They provide a framework that States can use when developing their own strategies, policies, legislation, programmes and activities
- They allow governments, civil society, the private sector and citizens to judge whether their proposed actions and the actions of others constitute acceptable practices
- Officially endorsed by the Committee on World Food Security on 11 May 2012.

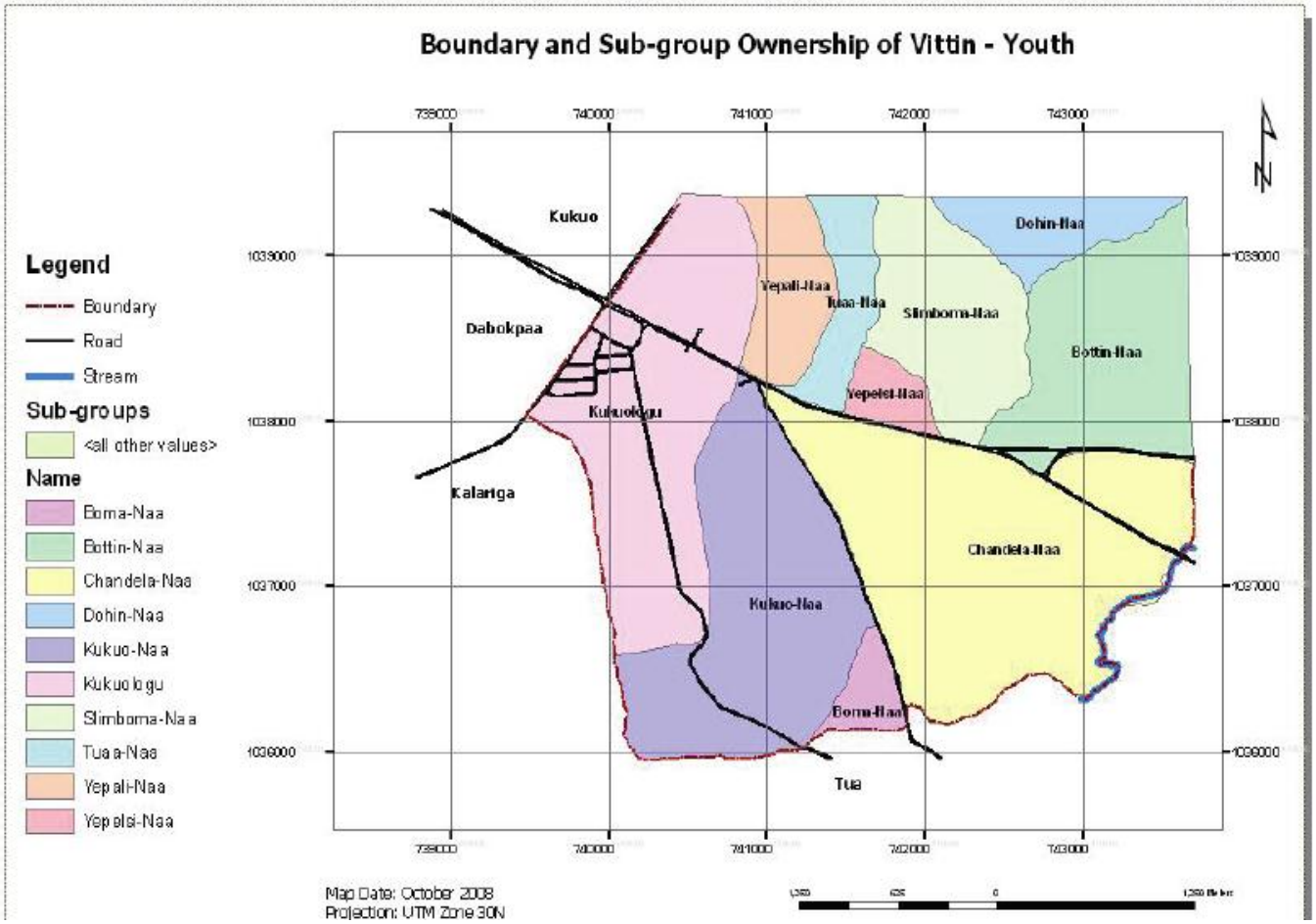


A case study from Vittin, Ghana – even in a single community, different groups do not hold a common view of customary land tenure



Elders' view of customary land tenure

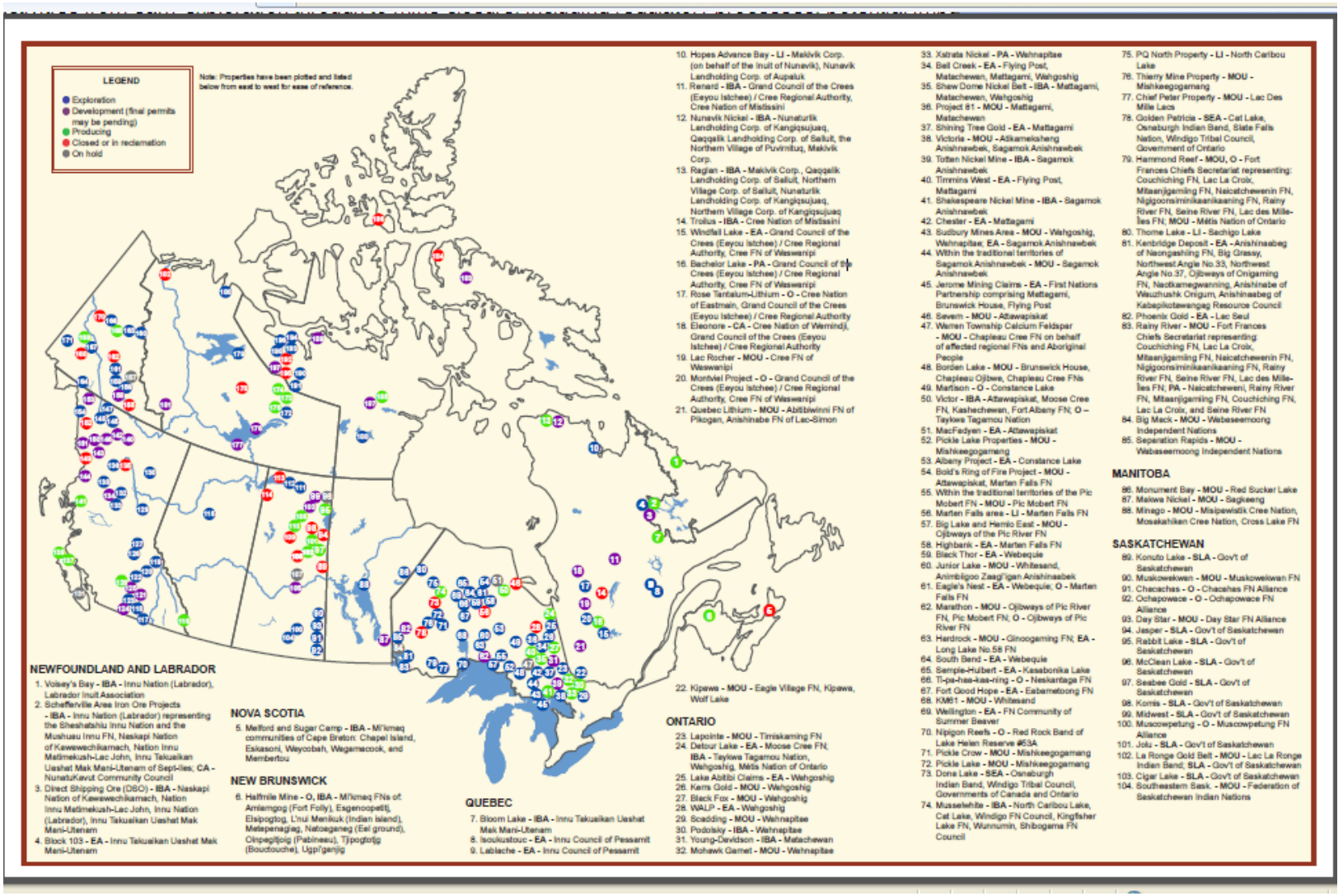
A case study from Vittin, Ghana – even in a single community, different groups do not hold a common view of customary land tenure



Youth view of customary land tenure

Source F.Lamptey 'Participatory GIS tools for mapping indigenous knowledge in customary land tenure dynamics

Mining agreements reached with Aboriginal communities in Canada



“G8 and developing countries will work together to make the use of natural resources more transparent”

- At the G8 “Open for Growth” event on 15 June 2013 G8 members committed to:
  - Support greater transparency in land transactions including at early stages, responsible governance of tenure of land, and increase capacity in developing countries
  - Establish partnerships with at least seven developing countries, including relevant international organisations, to accelerate and target support to countries’ existing land governance programmes in conjunction with businesses, in particular farmers, and civil society
- The seven pilot country partnerships are Burkina Faso (US), Niger (EU), Nigeria (UK), Senegal (France), South Sudan (EU), Tanzania (UK) and Ethiopia (UK, US, Germany).

What are the challenges facing National Mapping and Land Agencies?

1. Need for a national, regional and global strategic framework for geospatial information;
2. Need to establish best practices in institutional arrangements, legal and common frameworks;
3. Build capability and capacity, especially in developing countries;
4. Assuring the quality of geospatial information;
5. Promoting data sharing, accessibility and dissemination;
6. Embracing trends in information technology;
7. Promoting geospatial advocacy and awareness;
8. Partnering with civil society and the private sector; and
9. Linking geospatial information to statistics

http://ggim.un.org/2nd%20Session/E-C20-2012-5%20Inventory%20of%20Issues%205%20July.pdf

The future role of governments in geospatial data provision and management

End-users should be able to consume government-assured spatial data with the level of trust in quality as they do when they get water from the tap – they are going to get what they expect.

Authoritative data: fulfilling the needs of regional, national and global development