Policy for Geographic Information from Ordnance Survey

Response to Consultation from Christopher Roper

I am responding as an individual. I have been directly involved in many of the issues addressed by the consultation document since 1990, first as founder and managing director of businesses using Ordnance Survey Data (Longman GeoInformation, Landmark Information Group), then as a member of the Council of the Association for Geographical Information (1992-94), as one of two private sector members of the Board of the National Geospatial Data Framework (1994-97), and as an expert member of the Advisory Panel on Public Sector Information (APPSI) (2003-2008). I have also contributed articles and conference papers on the issues under discussion,

In my view, the Consultation Document should have included a clear statement of objectives that would inform the debate on future policy. I would summarise these as follows:

1. A strategic direction that contributes to successful delivery of the Location Strategy and the Core Reference Geographies;
2. A strategic direction that avoids short-term disruption of the marketplace, and that would be likely to survive a change of government;
3. A strategic direction that increases innovation and competition in the GI marketplace; and
4. A strategic direction that does not require long-term direct subsidy from the Treasury;

I will come back to these objectives, but I do not believe any of the three options offered in the Consultation Document will meet them. I offer a fourth option that would satisfy all four criteria. My fourth option would leave Ordnance Survey as a Trading Fund, with transparent upstream/downstream accounting. However, there would be statutory spatial registers for all the Core Reference Geographies, *bar* hydrography and topographic mapping, that would be made available free at the point of use. The funding of the spatial registers is also considered.

John Denham puts his finger on a fundamental problem in his Foreword, where he writes, *"Government has not always been clear about what it requires of Ordnance Survey – as either an owner or a customer."* This is central to the problem and my reading of the Consultation Document suggests that the Government still lacks a clear answer to the implied question. The authors seem to proceed from the assumption that Ordnance Survey currently delivers what the Government requires and that the main issues hinge on pricing and access. It would have been helpful if the Government had made up its mind about what it required (as Customer and Owner) before embarking on this Consultation.

The other big problem is the short-termism of the thinking that seems to underpin the Consultation. The question that needs to be asked and answered is: What kind of National Mapping Agency will be required in 10, 20 or 30 years time? One can confidently say that it won't look anything like the Ordnance Survey we have today.

The cost in the marketplace of the activities that formed the basisof Ordnance Survey's operations for almost 200 years (surveying, cartography, the production and distribution of

topographic maps and plans) has been cut by an order of magnitude over the past 40 years. Yet Ordnance Survey continues to behave as if the fundamentals of its task were unchanged.

The opening of Global Positioning Satellites to civilian use by President Reagan in 1983 (See answer to Question 2 below), and the development of globally linked, spatially-organised databases on the World Wide Web, accessible to the citizen at effectively zero cost, has changed the way we use Geographical Information so fast that a deeply conservative institution like Ordnance Survey has been unable to keep pace.

Question 1: Views and Comments on the Policy Drivers

For more than a decade Ordnance Survey has been at the centre of a series of bureaucratic/political/commercial controversies that have been extremely damaging, both to Ordnance Survey itself and to the Geographical Information Community at large. Trust, between Ordnance Survey and its customers, and between Ordnance Survey and its commercial partners, has been tested to the limit and is in sore need of rebuilding.

The Consultation Document recognises the importance of Geographical Information as, "*Location, like time, is a key concept by which people understand and categorise other public data*". This is the most telling phrase in the whole document. Time is measured and managed so that everyone who needs it has access to accurate clocks; with respect to Location, we live with a situation in which *"few government datasets that incorporate location could be easily assembled and analysed with reliability"*.

"The Location Strategy is focused on joining up, and integrating, information from the many public sector sources within a consistent reference framework to lead to an improvement in data exchange". Despite this quote in the Consultation Document from Place Matters (The Document setting out the Government's Location Strategy), there is very little in it about Ordnance Survey's role in delivering *a consistent reference framework.*

Furthermore, the Consultation makes scant reference to the succession of studies and reports, going right back to Lord Chorley's Report 20 years ago that have discussed the desirability and feasibility of a national Spatial Data Policy. Without some discussion of these precedents and their (to a greater or lesser extent) failure, it is hard to summon up any belief that this latest exercise is going to meet with any greater success.

This is very frustrating for the Geographic Information Community, whose views informed the drafting of both the Location Strategy and the OFT's Market Study into the Commercial Use of Public Information; the core of what needs to be done is neither difficult nor expensive. It does, however, need someone at the heart of Government to answer the questions posed by John Denham in his Foreword. Given that the Consultation Period will end just as the Election Campaign kicks off, what hope is there of that?

Question 2: The Market for Geographic Information, Past and Future

Right up to the last decade of the 20th Century, Geographic Information was an island, inhabited by distinct tribes of techies, each with its own niche speciality. It was not big business. Geographic Information Systems, like mainframe computers twenty five years earlier, required major capital investment and highly qualified carers.

Even when Landmark Information Group was founded, in the middle of that decade, building a spatial database of 250gb was entering unknown territory. Integrating the GIS with an Oracle database was another pioneering piece of work. In 1998, integrating maps with data from other sources across the WorldWideWeb was an innovation that seems trivial today.

The Global Positioning Satellite (GPS) system is taken for granted today, but it is only 26 years ago that President Reagan decided it should be available for civilian as well as military use, and only 16 years (1993) since its initial operational capability was announced. In the same year it was also decided to authorize the world-wide civilian use free of charge.

Like the WorldWideWeb, which took off at about the same time, GPS changed everything. Maps can be continuously up-dated from real-time data; the cost of surveying dropped dramatically; and navigation systems are now consumer items. The focus of GIS shifted from high-end graphical displays to the database.

Until the coming of GIS (or automated mapping, as it was called), the only source of stored Geographic Information was a map, a plan, or a chart. It was inevitable in a globally networked world, with cheap aerial imagery and GPS technology, that mapping would lose some of the intrinsic value it commanded when its unique role was unchallenged.

Ordnance Survey's response to the rapidly evolving markets has been to build legal walls around its still valuable datasets in order to lock in existing high-value customers. In the medium term, for reasons set out in the previous paragraph, this policy is doomed to failure. Most recently, OpenStreetMap, using the organising principles established by Wikipedia and Linux, has demonstrated the power of crowd-sourcing applied to building a global streetmap. So that, for example, some 90% of the data to be made available in the Meridian Dataset (one of the proposed "free" datasets) is already freely available in OpenStreetMap.

The problem for Ordnance Survey is that much of the value is migrating to the added-value that companies like Landmark Information Group build around the map. In an extraordinarily myopic fashion Ordnance Survey, for almost a decade, has refused to work constructively with partners to build new revenue streams.

As the most-powerful and best-resourced National Mapping Agency in Europe, Ordnance Survey could have used its leadership role to urge the creation of Core Reference Geographies for Europe. Instead, it has lobbied consistently against any liberalisation of Public Sector Information (PSI) regimes, helping to neutralise the potential impact of both the PSI and the INSPIRE Directives from the European Union.

This has not only crippled the industry, it has prevented local and central government from delivering innovative information services focused on the needs of the citizen. Ordnance Survey has not only restricted the uses to which its data is put, it has also sought to control

the use of any derived data sets that are created by its licensees. It was not surprising, therefore, that when the Department for Transport wanted to locate every bus stop in the country, it went to great lengths to ensure that the data was not contaminated by OS Copyright. One reason from the relatively poor take up of Ordnance Survey data under the Pan Government Agreement is the restrictions that Ordnance Survey place on its usage. Until relatively recently (early years of this century) Ordnance Survey insisted that each agency having its own instance of the data; so that they couldn't share a common hosting service.

Yet one significant obstacle to the take up and use of Geographical Information Systems over the past 20 years has been their cost, in terms of both skills and money. I have always believed that Geographical Information Systems would realise their full potential only when delivered like electricity, down a wire, available at the turn of a switch. This shift is taking place, but far more slowly than would have been the case if Ordnance Survey had promoted less restricted on-line access to its data.

The market will continue to evolve around free-at-the-point of use mapping systems, supported by either advertising or crowd-sourcing. Without a fundamental re-thinking of Ordnance Survey's role, the opportunity will be lost to create a "consistent referencing framework", as the main trends will be divergent and variant. I think the value chain described by LEK is misleading (as they recognise) and needs to be refined for different market segments. In particular, it underplays the value of "services" and exaggerates the value of "hardware" in the composition of the marketplace.

The comment in Paragraph #2.31 to the effect that "In the B2C market,GI mapping data is typically regarded as an operating cost as opposed to a revenue driver, and a very high degree of accuracy is not seen as critical for use", might equally be applied to wide swathes of the B2B marketplace. In fact the kind of positional accuracy delivered by OS is required only by surveyors, architects and civil engineers. No other country in the world offers national coverage at the resolution provided by Ordnance Survey

Section 3: Ordnance Survey

No Consultation Questions are attached to Section 3 of the Document. However, it requires comment:

.1 There *would* be "a large social benefit to having a common standard across the country…", but as the Document setting out the Location Strategy (Place Matters) establishes, we don't have one. We don't have an authoritative National Street Gazetteer. Many of the place names in the 1:50,000 Gazetteer are wrong.

.2 *"…from which a range of products and services are derived which meet Great Britain's digital mapping and GI data needs".* This is, to say the least, a disputable assertion (see Paras #6.41 and #6.42). It is Ordnance Survey's view of the world. Because Ordnance Survey has been both the preferred supplier of GI to Government *and* the Government's advisor on Geographical Information, there has been little opportunity for an independent synoptic view of what the

Government should or could expect from a reformed National Mapping Agency (Perhaps advice should be sought from Australia or Canada).

.3 According to Figure 8 B2G income has been stable, while B2C income has been declining. Changes in the B2B market need more analysis, and what OS regards as the purchase of "solutions" is better seen as growth of value added services.

Question 3: Pricing

The problem is that without transparent upstream/downstream accounting, Ordnance Survey will "game the system", resisting change by all possible means. This has been its stance throughout its long history (see OFT Comment, cited below, under Regulation), no matter who is Chief Executive. Having watched Ordnance Survey at work, from relatively close quarters, for almost 20 years, I have no confidence in externally applied schemes designed to make Ordnance Survey fully accountable for its actions or, more frequently, its inactions. There are three businesses rolled up into Ordnance Survey. The first, its original function, is the collection and maintenance of spatial data, surveying and processing; the second, presently quite small role, involves the maintenance of what should be statutory spatial registers (the Geodetic Framework, Boundary-Line and Address Layer 2); and the third is as a publisher of digital and paper maps.

It is difficult, if not impossible; to come up with a pricing scheme that covers all three functions. Furthermore, there is no reason why all three should be undertaken by the National Mapping Agency. Ordnance Survey is unique in the Western World in the scope and breadth of its functions. Given the development of OS over the past two decades, it probably makes sense for its publishing arm to operate with total commercial freedom, either in the public or the private sector.

However this will work only if it is subject to competition, buying its data on the same terms as its competitors. Ordnance Survey should be able to bid to maintain the statutory spatial registers (a subset of the Core Reference Geographies envisaged by the Location Strategy), but these should be funded on a fee-for-service basis under service level agreements, and it should not be a foregone conclusion that Ordnance Survey would win the tender.

Question 4: Regulation

The "*Complex policy, legal and governance framework*", in which it operates, has been used by Ordnance Survey to avoid addressing serious issues arising for customers and partners in their dealings with Ordnance Survey. The Box on p39 of the Consultation Document, summarising the December 2006 CUPI market study from the Office of Fair Trading does scant justice to its conclusions, which were more critical of Ordnance Survey than of any other Public Sector Information Holder (see especially Paragraphs 7.45 & 7.46)

"We consider a number of factors appear to differentiate OS from other PSIH … Apart from being the largest PSIH … one of the more noticeable factors is the way in which previous attempts by regulators and other bodies to influence OS have met with resistance"

"As a result of the problems identified with OS … we consider it essential that the issues set out above are resolved without delay. We have discussed our concerns both with OS and the Department for Communities and Local Government However, should the concerns set out above not be resolved, we would need to consider whether further action by the OFT would be warranted to address these concerns."

It almost goes without saying that, three years on, Ordnance Survey has made few changes in its practices, and none in its behaviour. The Consultation Document makes much of the Information Fair Trading Scheme, but OS was able to secure its endorsement, while refusing to license its data for any company that proposed "*to market a product whose intended use is the same as, or comparable to, any product marketed by OS itself or any product which OS intends to market*." This policy may now have been modified, but the fact that it existed until very recently is illustrative of Ordnance Survey's underlying attitude to competition.

OPSI's IFTS is very helpful where a PSIH wishes to co-operate and meet the stated objectives of government. Where the PSIH digs its heels in, there seems to be very little that OPSI can do to impose an equitable solution. This is partly because the Public Sector Information Directive, as transposed into UK Law, is so weak and leaves so much wriggle room as to have barely touched the behaviour of the larger Public Sector Information Holders. What has happened is that every contract negotiation with Ordnance Survey is prolonged and made more difficult by the intervention of Ordnance Survey lawyers. Simplification is promised for 2010, but it is noticeable that no details of proposed changes were available in time for this consultation.

The section on Public Task is a wonderful illustration of how hard it is to understand any practical application of the PSI Directive to the United Kingdom. I cannot think of a single instance in which the Directive has changed the behaviour of a PSIH or enabled a publisher to gain access to information that would not have been otherwise available.

I understand the reluctance of Government to appoint a full-time regulator to watch over Ordnance Survey. However, simply asking OS to change its behaviour is like asking an alcoholic to stop drinking. This is as much the fault of Government over the past 30 years as it is the fault of OS. OS has been driven by the Treasury to maximise its profitability, and it has done this in the only way it knew, which was to extract a monopoly rent wherever possible.

For this reason, Ordnance Survey's Business needs to be divided between its topographic mapping business, where it should be subject to normal commercial competition, and other data collection and management businesses that should be run on a fee for service basis. It should not be able to use its holdings of Core Reference Geographies to lock in customers or maintain artificially high prices.

The Strategic Options Framework

The objectives listed in Paragraph 5.8 are all reasonable, but there should be mention of the need to harmonise these objectives with the Location Strategy. Furthermore this section trails away into an agony of indecision, feeling (wrongly, I believe) that some of the objectives

listed in Para 5.8 are conflicting. Why? No explanation nor examples are given. The final sentence: *"To realise the innovation and development expectations for this technology-led sector and to maintain the world-leading data quality of definitive GI datasets, this [sic] will require long-term funding commitments."* was, I feel sure, inserted by a very senior executive of Ordnance Survey, more of a threat than a promise.

One of the factors that bedevilled GI until the appearance of Google Maps was that the sector was *"technology-led"* rather than *"demand-led"*. Technology will not give us definitive data. Definitive data need not be expensive; it simply requires political will and administrative action. It would cost much less than the Free Products envisaged by the Prime Minister.

Question 5: Release of Free Products

This is most disappointing; the simple release of a selection of Ordnance Survey products for free use does not address the key issue of how Core Reference Geographies are to be maintained and funded. Apart from Boundary-Line (which is one of the Core Reference Geographies that should be free at the point of use), the chosen products will brighten up some web applications and will cut into the sales of paper maps, and will weaken Ordnance Survey without fostering competition and innovation.

This feels like a sop to the free-our-data lobby without any real fit with the strategic thinking about Ordnance Survey's role that needs to go on. It will do nothing to help with the cross-referencing of data held by different government departments. Apart from Boundary-Line, which is required by government, why should Ordnance Survey go on delivering all these products? Are they required by government? Do the emergency services require both 1:25,000 and 1:50,000? It feels as poorly thought through and as pointless as OS OpenSpace.

Code-Point is useful in urban and densely populated suburban areas, but useless in rural areas. My own house is half a mile from the location given by Code-Point for EX13 5UW, and that is fairly typical for large swathes of rural England, Scotland and Wales.

Question 6: How much should the government commit to funding?

Money will be required to fund the development and maintenance of Core Reference Geographies, but it should not go as a direct subsidy from the Treasury to OS. Subsidies come and go at the whim of government. The history of NIMSA is instructive. Before the funding for NIMSA was removed, some 300 interested parties were "consulted", the overwhelming majority >90% thought either that it was at the right level or should be increased. A small minority <5% thought it should be reduced and 1% thought it should be eliminated. This last was the preferred option. I could never understand why they troubled to ask our opinion.

The way in which the debate has become polarised around "free data" vs "commercial data" is extremely unfortunate and could have long-lasting, adverse consequences for Ordnance Survey and the Location Strategy. The Canadian approach, which involved releasing *"its digital datasets that underpinned its topographic map products for free"* is much more sensible. So is the US example of providing definitive street mapping prepared for the Census (TIGER files).

Question 7: How should the free data be delivered?

If the Government is determined to hand over its small-medium scale raster data, why does it not follow the example of some other countries and hand it over to OpenStreetMap (OSM), leaving it to manage and maintain the data through crowd sourcing. That would not only stimulate innovation at the level of data collection, it would open the way for creative collaboration between Local Authorities and community-based organisations. Interestingly, OSM is a British-born innovation. It turns OS Open-Space into an embarrassing redundancy. The Meridian Data would be useful to the OSM project, but only in speeding up the completion of OSM in the UK.

Question 8: Market Impact

In the medium-to-long term, the Free Data initiative, as presently envisaged, will have an adverse impact on the quality of Ordnance Survey's paper maps, as the demand for these will drop, both in the face of supply over the internet and into mobile devices, and through direct competition in popular areas. It also seems unlikely that future governments will wish to see a permanent subsidy to Ordnance Survey to maintain this range of products. There may be a longer term adverse impact on Ordnance Survey arising from the substitution of the OS Street View (1:10,000) Mapping for MasterMap in many B2B and B2G applications.

Question 9: National Address Register

It's all so tentative: *"Interest has also been expressed in adding an address product to those released under Ordnance Survey Free."* Sir Michael Scholar, Chair of the UK Statistics Authority, put it more bluntly in his letter (8 July 2009) to John Healey, Minister of State and the Department for Communities and Local Government (DCLG):

"Without an Address Register we will never have continuously up-to-date knowledge of the size and distribution of the population."

"The Statistics Authority believes that despite the pressures on public expenditure, indeed because of them, it is now time for the government to take urgent action to create a single definitive register."

After the failure of the National Spatial Address Infrastructure (NSAI), and to this day, the DCLG argues that departments are able to deliver their business without the NSAI. However, in evidence to the House of Commons Treasury Committee's 2008 inquiry Counting the Population, a Treasury official made it clear that competing intellectual property rights were at the heart of obstacles to the NSAI.

However, all these intellectual property rights are held by public sector bodies, so it shouldn't be beyond the wit of government, given the political will, to pool them.

It is also clear, to anyone who thinks about it for five minutes, that we cannot have a National Address Register without an authoritative/definitive National Streets Register. The Location Strategy cannot be delivered without addressing this problem. Furthermore the central problem highlighted by Place Matters, the document proposing the Location Strategy, was the inability to link spatially referenced data from different government databases.

Since the most common spatial referencing in official databases is a postal address, it can easily be seen that the linking problem will not be solved without a national address register. Of course departments can manage without such a register, it begs the question of how much more efficiently they would operate with one. For centuries, despite the invention of double entry book keeping, HM Tresury managed the national accounts using notched tally sticks. It worked, but it wasn't rational. Ordnance Survey itself opposed the introduction of colour printing in the 19th century "because boys could be employed to colour the maps for less".

The obstacles presented in Paragraph #7.39 are particularly limp. There is no clear sponsor in Government, because the burden of delivery would fall in one place, while the benefits

would be systemically spread right across the economy; and, of course, *"the parties involved have been concerned to maintain independent revenue streams"*. Why am I not surprised? These are obstacles that can be easily overcome with political will.

As for Paragraph 7.41, words fail me. "Different parts of government are working hard in collaboration with Ordnance Survey and other interested parties to seek a resolution to these issues". They have been "working hard" for a decade without making any progress. Executive action, rather than hard work is required, requiring political will that has been conspicuously absent from the equation.

The Acacia Project, involving Local Government, Royal Mail and Ordnance Survey, spent months (if not years) and tens of thousands of pounds in consultancy fees, under the chairmanship of Andrew Edwards (formerly a senior Treasury Civil Servant), trying to reach agreement, just as fruitlessly as the DCLG tried to deliver the NSAI. As a result, the Office of National Statistics has spent £millions building an address register that is adequate for running the 2011 Census.

Bad addressing was also responsible for many of the defects of the 2001 Census.

How to deliver a single National Address Register

1. Call for tenders to build and maintain a National Address Register; the competition should be open to both public and private sector bodies. The proposals should include mechanisms for funding the Register;
2. The tender will not deliver the right solution if holders of existing UK Address databases are allowed to bring political pressure to bear on those assessing the bids. This process needs to be as open, transparent and independent as possible;
3. Compensate holders of existing UK Address databases, in exchange for their co-operation in building the new Register.

Question 10: The Options

Sadly, one has to say: "None of the above". I don't want to pick through each of the options as many of my objections will be clear from the foregoing pages. None of them meet the criteria set out at the beginning of this response:

1. A strategic direction that contributes to successful delivery of the Location Strategy and the Core Reference Geographies;
2. A strategic direction that avoids short-term disruption of the marketplace, and that would be likely to survive a change of government;
3. A strategic direction that increases innovation and competition in the GI marketplace;
4. A strategic direction that does not require long-term direct subsidy from the Treasury.

With respect to criterion #2 above, it is worth saying that uncertainty and doubt about the government's real intentions, linked to a suspicion that the whole debate will start again after the 2010 General Election, no matter which party holds a majority in the House of

Commons, is a major disincentive to investment and innovation by both the public and private sectors. "*Location, like time, is a key concept by which people understand and categorise other public data*". It should be possible to reach a national consensus on how a national geospatial reference framework is established and maintained.

My Option 4 would start with these four criteria. I recognise the difficulty of starting this process burdened by the Prime Minister's offer to freely distribute certain Ordnance Survey datasets.

At present, the government seems to start from the premise that Ordnance Survey delivers all the spatial data it needs to manage the government and the economy. Words like "definitive" and "world-class" are sprinkled like a garnish.

What we actually need (but don't have) is set out in the Location Strategy; in Sir Michael Scholar's letter; and in evidence to a series of House of Commons select committees. Ordnance Survey is in a position to deliver some of what is required.

However, Ordnance Survey, as it is presently organised and managed, will pursue its own ends and (quite ruthlessly) oppose any perceived threat to its present *modus operandi*. The commercial tail now wags the national interest dog to such an extent that a pre-condition to reform is the break-up of Ordnance Survey into a DataCo and a fully commercial ProductCo. However, ProductCo should not carry with it embedded IPR in *either* obsolete OS datasets (e.g. Land-Line) *or* in derived data that pre-dated the vesting of Productco, nor should Productco control any of the Statutory Spatial Registers required to implement the Location Strategy.

That, in itself, is not enough. The Government has to decide, in consultation with DCLG, the Emergency Services, the Land Registries, Local Government and DEFRA what it really requires from Dataco. A new definition of the National Mapping Agency's role in the 21st Century is urgently required. This issue has not yet been addressed, and one fears that neither Ordnance Survey itself nor the Location Council as presently constituted will provide the government with a clear way forward.

Clear strategic advice that is independent of any of the currently contending parties (perhaps from Australia or Canada), followed by decisive executive action, is required. At present, enquiry follows enquiry, report follows report, and consultation follows consultation, all without any fundamental change in the way Ordnance Survey goes about its business, even though virtually everyone (including senior Ordnance Survey executives) agrees that the present situation is unsatisfactory.