

## Summary: Intervention & Options

<b>Department /Agency:</b> <b>Department for Environment, Food and Rural Affairs</b>	<b>Title:</b> <b>Impact Assessment of Transposition of the INSPIRE Directive (2007/2/EC)</b>	
<b>Stage:</b> Consultation	<b>Version:</b> v4.1	<b>Date:</b> 3 February 2009
<b>Related Publications:</b>		

Available to view or download at:

<http://www.>

Contact for enquiries: Ian Greenwood

Telephone: 020 7270 8502

**What is the problem under consideration? Why is government intervention necessary?**

Government intervention on public authority geographic datasets can: avoid duplication of effort in data collection; encourage efficiencies; support better policy design, implementation, evaluation and emergency response. The private sector is unlikely to intervene because of competition issues around high initial costs of entry to the market and few participants. Limits on raising revenue from services to the public mean income coming principally from charges on public authorities. This could deter public authorities from taking part with attendant loss of benefits.

**What are the policy objectives and the intended effects?**

This initiative will reduce the cost of data collection, increase efficiency through better data sharing and better policy design, implementation and evaluation. It will also improve public authorities ability to respond to emergencies. The INSPIRE Directive establishes a pan European spatial data infrastructure for environmental information and its transposition is consistent with the Government's Location Strategy supporting the development of, and access to, shared and integrated geographic information in the areas of environmental protection, health, education, retail and insurance.

**What policy options have been considered? Please justify any preferred option.**

The preferred regulatory approach that implements the Directive has been compared with a "business as usual" base case. In developing this assesment other broader scenarios, including voluntary co-operation and a more prescriptive approach to implementation had been assessed but discounted: voluntary co-operation had been tried previously but found to be unsuccessful and a more prescriptive approach, although delivering greater harmonisation woud have been significantly more expensive.

**When will the policy be reviewed to establish the actual costs and benefits and the achievement of the desired effects?** Triennial monitoring will start no later than 2013 and include an assessment of the costs and benefits of implementing these Regulations. Evaluation of the Regulations will take place in year 5.

**Ministerial Sign-off** For consultation stage Impact Assessments:

*I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.*

Signed by the responsible Minister:

Lord Hunt of Kings Heath

.....Date: 27 February 2009

## Summary: Analysis & Evidence

<b>Policy Option:</b>	<b>Description:</b>
-----------------------	---------------------

<b>COSTS</b>	<b>ANNUAL COSTS</b>	Description and scale of <b>key monetised costs</b> by 'main affected groups' Cost to public authorities including local government of data harmonisation, coordination monitoring and reporting. Precise timing and hence calculation of Present Values dependent on the availability of detailed implementing rules from the Commission			
	<b>One-off</b> (Transition) <b>Yrs</b>				
	£ <b>55-60m</b>		10		
	<b>Average Annual Cost</b> (excluding one-off)				<b>Total Cost (PV)</b>
Other <b>key non-monetised costs</b> by 'main affected groups' No direct impact on the private sector as the Directive places obligations only on public authorities					

<b>BENEFITS</b>	<b>ANNUAL BENEFITS</b>	Description and scale of <b>key monetised benefits</b> by 'main affected groups' Estimated savings in production of EIAs and SEAs and delivery of risk prevention policies which will accrue towards the end of the implementation period				
	<b>One-off</b> <b>Yrs</b>					
	£					
	<b>Average Annual Benefit</b> (excluding one-off)				<b>Total Benefit (PV)</b>	<b>£ 152m</b>
Other <b>key non-monetised benefits</b> by 'main affected groups' Improvements in public policy design and intervention resulting in improved outcomes; private sector improved efficiency (e.g. utilities) and the creation of new products and services and improved access by the general public.						

Key Assumptions/Sensitivities/Risks Delay in the availability of detailed implementing rules
--

Price Base Year 2009	Time Period Years 10	<b>Net Benefit Range (NPV)</b> <b>£ 106-198m</b>	<b>NET BENEFIT (NPV Best estimate)</b> <b>£ 152m</b>
-------------------------	-------------------------	---	---

What is the geographic coverage of the policy/option?	UK			
On what date will the policy be implemented?	From 2010			
Which organisation(s) will enforce the policy?	Defra			
What is the total annual cost of enforcement for these organisations?	£			
Does enforcement comply with Hampton principles?	Yes			
Will implementation go beyond minimum EU requirements?	No			
What is the value of the proposed offsetting measure per year?	£			
What is the value of changes in greenhouse gas emissions?	£			
Will the proposal have a significant impact on competition?	No			
Annual cost (£-£) per organisation (excluding one-off)	Micro	Small	Medium	Large
Are any of these organisations exempt?	Yes	Yes	N/A	N/A

<b>Impact on Admin Burdens Baseline</b> (2005 Prices)			(Increase - Decrease)		
Increase of	£ n/a	Decrease of	£ n/a	<b>Net Impact</b>	<b>£ 0</b>

Key: Annual costs and benefits: Constant Prices (Net) Present Value

## Evidence Base (for summary sheets)

[Use this space (with a recommended maximum of 30 pages) to set out the evidence, analysis and detailed narrative from which you have generated your policy options or proposal. Ensure that the information is organised in such a way as to explain clearly the summary information on the preceding pages of this form.]

### A: Background

INSPIRE (INfrastructure for Spatial InfoRmation in Europe) is a Directive (2007/2/EC) which was adopted in 2007 and has to be transposed into UK law by 15 May 2009. The Directive lays down a general framework for a Spatial Data Infrastructure for the purposes of community environmental policies and policies or activities which have an impact on the environment. It aims to improve the interoperability of, and access to spatial information across the European Union at a local, regional, national and international level; facilitate improvements in the sharing of spatial information between public authorities; and to provide improved public access to such data.

### B: Scope

The Directive covers UK spatial data sets held by public authorities, third parties holding data for or on their behalf or third parties wishing to be take part, or third parties holding data for or on their behalf. The Directive covers 34 environmental thematic areas. However, the approach adopted in the Directive creates a framework of standards, inter-operability and infrastructure support which could be extended to include other datasets such as agriculture and transport which individual Member states may wish to consider exploiting in due course. A premise of the Directive is that the infrastructure should build on those established and operated by Member States.

### C: The Case for Intervention

Much information collected by public authorities contains “place-based” or “location based” information i.e. geographic information. When different types of information about a particular place are compared or related to each other, this can increase considerably the understanding, and hence the power to make effective decisions about a particular place.

That said, much of the information collected is not available to be used again as it is not widely known that it was collected nor where it is stored. Data are likely to have been collected using local rules preventing their use with data about the same location from another organisation. They may also have been collected in a format which prevents ease of sharing; and its quality and provenance may not be known.

Results of a survey of 50 organisations across Europe engaged in the preparation of Environmental Impact Assessments (EIA) and Strategic Environmental Assessments (SEA) indicated that the five most frequent difficulties related to<sup>1</sup>:

- Problems with getting access to existing data (70%);
- Difficulties with finding out which data are available (56%);
- The data we need are not available (51%);
- Datasets from different suppliers are not compatible (47%);
- Existing data are of insufficient quality (47%).

As a result of these difficulties, over half of the respondents indicated that the impact on their work included:

- Lower level of accuracy of description of impacts;

---

<sup>1</sup> Survey conducted in 2003 and reported in the Commission's Extended Impact Assessment which can be found at [http://inspire.jrc.it/reports/inspireextendedimpact assessment.pdf](http://inspire.jrc.it/reports/inspireextendedimpact%20assessment.pdf)

- Higher uncertainty of extent of impacts identified;
- Higher cost of EIA/SEA studies.

Similar problems are known to occur in other policy areas. For example, spatial information plays a key role in enabling Defra to deliver its licence to operate activities and communicating with the public, and was vital in 2007 during the outbreak of Foot and Mouth Disease and the summer floods<sup>2</sup>. But the information can be hard to find and use.

The current situation imposes costs and inefficiencies on a wide range of public authorities due to duplication of effort; hampers the use and integration of place based information to inform policy development; and presents difficulties for the public with respect to accessing data on their locality and local community. Current users of geographic information spend 80% of their time collating and managing the information and only 20% analysing it to solve problems and to generate benefits<sup>3</sup>.

The INSPIRE Directive seeks to address this problem through creating a Spatial Data Infrastructure designed to ensure that: spatial datasets are stored, made available and maintained at the most appropriate level; that it is possible to combine data from a variety of sources in a consistent way and to share them between users and applications; spatial data collected at one level of public authority can be shared between other public authorities; spatial data is made available under conditions which do not unduly restrict their extensive use; and that it is easy to discover available spatial data, to evaluate its suitability for the purpose and to know the conditions applicable to its use.

#### **D: Commission Timescales**

Timescales for implementation remain somewhat uncertain as the Directive will be implemented by means of a number of technical Implementing Rules, describing the standards and specifications for the services which will allow data to be searched, viewed and downloaded. These Rules will be approved by the INSPIRE Committee using the comitology procedures. The Commission has produced a roadmap for INSPIRE, which consists of a number of milestones, some of which are dates prescribed by the Directive, and some which are merely proposed dates. This is at Annex 2 together with a schematic which summarises the current view of key deliverables over the next 4 years.

#### **E: Consultation by Defra**

Defra has involved all major stakeholders in discussions throughout the negotiation of the Directive. The Location Council, a cross-government group, including the devolved administrations, has been established as a senior governance group to provide leadership and direction to implement the Directive and the Location Strategy. Both developments have involved consultation with a wide range of public and private sector organisations<sup>4</sup>. The Council is supported by a transposition project board; and a sub-group on interoperability and a User Group are in the process of being established. Organisations and government departments consulted both on the Directive and on the Location Strategy are listed in Annex 3.

#### **F: The Government's Position**

The Government supports INSPIRE, which was a major influence on the development of the UK Location Strategy<sup>5</sup>. Baroness Andrews (DCLG) in launching the Strategy 'Place Matters' on 25 November said "The Location Strategy will ensure we make better use of information already held so we can use it faster and with less expense".

<sup>2</sup> [www.ukresilience.gov.uk/news/fmd\\_2007\\_review.aspx](http://www.ukresilience.gov.uk/news/fmd_2007_review.aspx); and [www.cabinet-office.gov.uk/thepittreview](http://www.cabinet-office.gov.uk/thepittreview)

<sup>3</sup> Cf. footnote 1

<sup>4</sup> Place matters: the Location Strategy for the United Kingdom.  
<http://www.communities.gov.uk/publications/communities/locationstrategy>

<sup>5</sup> Cf. Footnote 4

The transposition of this Directive will be in line with Government policy and will assist in maximising the added value from spatial data through promoting its use, developing skills and access to the EC INSPIRE Geoportal. As indicated in later sections, the net benefits are expected to be significant.

## **G: Options considered**

### *Extended Impact Assessment 2003*

The Directive was one of the first Commission proposals subject to an Extended Impact Assessment (XIA), and which was published in 2003<sup>6</sup>.

When developing the INSPIRE proposal, the following five policy options were considered:

- (1) Do nothing;
- (2) Voluntary cooperation among Member States.
- (3) A broad framework backed by an EU Framework Directive based on the subsidiarity principle of devolved management to Member State level where obstacles are addressed in a step-by-step manner.
- (4) A comprehensive framework backed by an EU Framework Directive addressing all obstacles in a comprehensive manner.
- (5) EU Regulation stipulating how Member States should implement INSPIRE standards and infrastructure.

Option 1 described the baseline against which the other options were assessed. From the analysis of past progress and current trends, it was concluded that policy-making would still strive to be more integrated and sustainable but, without INSPIRE, the underpinning information base would remain patchy in coverage and variable in quality.

Option 2 was discarded at an early stage, as policy measures on awareness raising and voluntary coordination have been tried previously but have proved to be incapable of overcoming the obstacles to be addressed.

Option 3 represented a coherent set of measures which were consistent with measures being adopted in other countries where infrastructures for spatial information have been set up and which address some of the key obstacles to the use of spatial data in Europe.

Option 4, the comprehensive legal framework, went beyond Option 3 by including additional measures in order to address all the obstacles to accessing and using spatial data for governance across Europe, particularly in relation to data gaps and in relation to harmonization of historical data. It proved impossible to assess what the additional costs and benefits would be compared with Option 3 as there was no readily available overview of the availability and quality of existing spatial information. Furthermore, the structures needed to assess the needs and priorities of spatial data collection across the relevant policy sectors were and remain not in place. It was therefore decided not to proceed with this more ambitious option, as it could not be justified on cost/benefit grounds.

Option 5, the EU Regulation, might produce greater benefits than Option 3 as it would have allowed for a higher degree of harmonization of spatial data infrastructures across the Member States. However, this option might have had significantly higher costs in certain Member States with established spatial data infrastructures that would need to be adapted to the harmonized approach set out in the Regulation. Therefore, a step-by-step approach was preferred, first bringing together existing initiatives in the Member States in one common framework and only then considering what the additional benefits would be of further harmonization.

A full impact assessment was carried out on the preferred option, Option 3, and which was the basis for the Directive.

---

<sup>6</sup> Cf. footnote 1

## *Partial Impact Assessment 2005*

Defra produced a partial RIA on INSPIRE in 2005 to help inform the negotiations on the Directive. This partial RIA drew upon the work done for the XIA. It estimated costs and benefits for a number of options based on scenarios for the final agreed legislation, one of which was very close to the final adopted Directive<sup>7</sup>.

## *Current Impact Assessment*

This Impact Assessment draws heavily on both of these previous assessments, updating information on costs and benefits where this is available.

In this Impact Assessment the following options have been considered:

1. Business as Usual (“do nothing” base case)
2. Implementation that is consistent with compliance with the Directive, but does not go beyond these requirements (“Implementation”).

## Implementation

This provides a legislative framework which promotes best practice, with a particular focus on infrastructure. Key features include:

- Provision of catalogues that allow users to identify what information is available (metadata)
- Ensuring that information from different sources can be integrated (this will require information to adhere to specified common standards that INSPIRE will lay down)
- Providing online services such as discovery (to find out what data exists), view (to display, navigate, zoom in/out, pan, or overlay viewable spatial data sets), download (to obtain the data) and transform (to enable data interoperability)
- Employing licensing arrangements that allow information to be shared, accessed and used in accordance with Freedom of Information legislation, the Environmental Information Regulations and the Public Sector Information Regulations
- Monitoring mechanisms to demonstrate that the information is being made available
- Co-ordination mechanisms to ensure effective operation of the infrastructure.

It supports a federated approach to data provision, promoting inter-operability and sharing through data harmonization and the setting of standards, and places a duty on public authorities to share data. Technical arrangements for the interoperability and harmonisation of spatial data sets and services, rules governing the conditions concerning access to such sets and services, as well as rules concerning the technical specifications and obligations of network services, will be specified in the Implementing Rules referred to earlier.

In addition to putting in place the above framework, there will be a focus on driving value from the use of spatial datasets through marketing and skills development. It is anticipated that these functions will be supported by the Co-ordination Unit that will be established to monitor and report on development.

## *Further potential*

As indicated above, the approach adopted in the Directive creates a framework of standards, inter-operability and infrastructure support which could be extended to include other datasets. In addition, under Article 15 the Directive. The Commission will establish and operate an INSPIRE geoportal at community level. Establishing an UK equivalent may be worth exploring if it helps. By supporting a “one stop shop” approach to registration and access and further promotes utilisation of spatial information.

---

<sup>7</sup> Proposal for a Directive of the European Parliament and of the Council establishing an infrastructure for spatial information in the community (INSPIRE) (Commission text 11781/04).

The principal focus for the time being, however, is on implementation of the Directive and putting in place the basic building blocks although the Location Council will seek to ensure that in developing the more detailed Implementation Plan, it does so in a way which does not foreclose the potential to drive enhanced benefits from the approach. Decisions on extending the initiative to other datasets or the creation of a UK geoportal can await Implementation of the Directive. In making any recommendations to ministers the Location Council will apply a cost benefit test to ensure that any future developments to extend the scope represent good value.

## **H: Charging and cost recovery**

The Directive permits a public authority supplying a view service to apply charges where such charges secure the maintenance of spatial data sets and corresponding data services, especially in cases involving very large volumes of frequently updated data. Such charges, operated through e-commerce arrangements must not exceed what is necessary to secure maintenance of the spatial data sets and services and a reasonable return on investment. The decision to exercise this derogation would rest with individual public authorities.

With respect to public access, basic INSPIRE services such as discovery and (in the main) view will be free of charge to the public, but charges can be made for other services such as downloading data. The vast majority of transactions to members of the public will be free or at marginal cost of supply (in line with Freedom of Information, the Environmental Information Regulations, and the Re-use of Public Sector Information Regulations). Where charges are made for services, e-commerce services will be provided to assist ease of payment. It is up to data providers how they wish to deliver e-commerce services: for example, individually, in conjunction with other data providers, or through a third party.

## **I: Economic Analysis of Costs and Benefits**

### **(i) Costs**

Costs estimates and their timing will continue to be uncertain until there is clarity around the Implementing rules which have yet to be tabled, negotiated and agreed. That said, the estimates presented in this Impact Assessment draw together the available evidence and are considered to be adequate to support decisions regarding the preferred course of action.

### *Better Regulation and Administrative burdens*

The Directive applies only to public authorities and places no new information obligations on the private sector. Private sector organizations can elect to be part of the INSPIRE community but there is no requirement for them to do so. To that extent it is not believed that implementation of this Directive will add to the administrative burdens of the private sector. Indeed, it has the potential to reduce the costs, and enhance the benefits of doing business through the provision of more easily accessible and integrated data.

There will be new burdens on local authorities arising from data harmonization in respect of Annex 1 data themes. The one-off costs are discussed further below.

### **Option 1: Business as usual**

This option involves continuing to share and harmonise spatial information on a voluntary or collaborative basis. Whilst the UK does not currently have a formal National Spatial Data Infrastructure there has been and continues to be much activity in this area. Examples of such activity are listed in Annex 1.

In addition, the UK has numerous obligations for reporting on environmental issues to comply with European Directives and other international agreements. These tend to be carried out as separate activities and to different specifications, which renders their aggregation for state of the environment reporting difficult and more costly than they could be with a spatial data infrastructure in place. The (England and Wales) Environment Agency alone spends in the order of [£60] million per annum on the direct costs of meeting the environmental monitoring obligations of European Directives and other national and international agreements.

The partial Impact Assessment produced in 2005 drew on several sources of information to establish the (then) current expenditure on spatial information by public authorities:

- Cabinet Office Geographic Information Survey – at the end of 2004 the e-Government Unit in the Cabinet Office undertook a survey of GI activity. They received 207 responses from 185 different organisations, 98 per cent of the responses coming from the public sector. Approximately 25% of the responses were from Central Government (including the Devolved Administrations) and 75% from Local Authorities (including regional bodies). The survey asked a number of questions on GI expenditure;
- Information provided directly by Government Departments and Agencies to inform the Assessment. There was a slight degree of overlap between these figures and those provided in the Cabinet Office GI survey and figures were adjusted slightly to take account of this; and
- Other known expenditure not included in the above: for example the costs of producing and maintaining public sector data sets.

More recent information on expenditure is not readily available. The Location Council will be commissioning further work to analyse costs, including current and planned expenditure to inform its implementation planning. In the meantime, the estimates derived in 2005 are believed to be reasonable orders of magnitude and sufficiently accurate as a base against which to assess the incremental costs of implementation.

These costs are summarised in the following table. More detailed figures including the assumptions used in deriving estimates are provided in Annex 4.

Summary of estimated expenditure on spatial data infrastructure related activities (2004/5)

GI activity	Expenditure (£M)
Initial capital investment	1.94
Maintenance costs	5.65
Data procurement / Licensing costs	6.99
Staff costs	81.96
Major GI projects / initiatives <sup>8</sup>	92.13
Other known expenditure <sup>9</sup>	100.00
Total <sup>10</sup>	288.67 (c£322m at 2008/9 prices)

## Option 2: Implementation

Given the current level of activity and expenditure on GI activities it is believed that the provision of the underpinning infrastructure can be accommodated within the current planned expenditure under business as usual and that future investments and activities will be aligned with the emerging technical standards specified in the Implementing rules. This is in line with the approach adopted in the earlier partial IA which stated that “the cost of maintaining and developing these services is already being incurred and would remain so even in the absence of a Directive. It may be that a Directive would provide opportunities for some rationalisation of costs due to improved co-ordination of initiatives”.

Additional costs associated with this option arise, therefore, from two principal sources: data harmonization; and co-ordination, monitoring and reporting.

<sup>8</sup> As there may be some slight overlap with the figures mentioned in the Cabinet Office Survey the figure has been reduced by 10 percent to £92.13M.

<sup>9</sup> This relates to other known expenditure not included in the Cabinet Office GI survey or listed under major GI projects / initiatives, including the cost of producing and maintaining data sets e.g. production of Ordnance Survey data and re-engineering of UKHO data.

<sup>10</sup> This is the best estimate available but is probably an under estimate.

The partial Impact Assessment in 2005 estimated these costs at £17m and between £10.5m and £15.5m respectively; and between £27.5m and £32.5m in total (£30.7m to £36.2m at 2008/9 prices).

Any local authority who maintains and publishes any data externally which is a theme defined in any of the Annexes I-III of the Directive will be obliged to adopt the Implementing Rules for metadata, data specification, network access and data sharing. This is to ensure that their data is interoperable with that of other public sector bodies and therefore bring business benefits of easier use and greater exploitation of under used but potentially powerful information assets.

Work on new burdens [DN, which remains subject to final Defra Finance Director and LGA sign-off] suggests one-off costs of £4.7m incurred over the implementation period in respect of Annex I data themes for English local authorities. The cost, on a pro rata basis, for local authorities in the devolved administrations is £1m, given an overall upper estimate of £5.7m in respect of Annex I.

Annex II is not expected to apply to local authorities; and Annex III is significantly less stringent than for Annex I in which case the implications are unlikely to be greater than Annex I (though this would need to be reviewed in 2012-13 when the draft IRs will be at a state when this can be reassessed if required). For the purposes of this assessment we have therefore assumed new burdens, including for devolved administrations of £11.4m (twice £5.7m).

In addition, there will be Programme Costs associated with developing and overseeing the implementation of the Directive. These have been estimated at £700k for 2008/9, £3.3m for 2009/10, £5.5m 2010/11 and £3.3m for 2011/12 (Annex 4).

There may be some overlap between the earlier cost estimates provided for the Partial IA and these estimates of new burdens and Programme costs. For the purposes of the current IA we have simply summed the various figures to reduce the risk of underestimation and optimism bias.

Based on the above analysis, total implementation costs over 10 years are estimated at between £45m and £57m (discounted at 3.5%). Over this period the best estimate of present value costs, discounted at a rate of 3.5%, is £50.9m (annual average £5.8m p.a.)

More precise estimation of costs and their timing should be possible in the light of further information received as part of the consultation, and more detailed implementation planning by the Location Council.

As a check on the reasonableness of this estimate, the Commission's XIA estimated the additional costs to be equivalent to 6% of estimated spend, which was reduced to between 2% and 3% on the grounds that current spend was probably underestimated by factor of 2. The above estimate of up to £55m is less than one-fifth of current spend, and therefore might be considered a prudent, over estimate.

It is believed that the application of common data standards and the presence of co-ordination could yield efficiency savings of up to 10% of current spend (roundly £32m). Given the risk of at least partial double counting of benefits (see next sub-section) cost estimates are presented gross of any possible efficiency savings.

## (ii) Benefits

Implementation of the Directive is expected to result in substantial benefits. At this stage it is difficult to provide precise estimates as to their quantum and timing given that the Implementing rules have yet to be agreed. This section describes the nature of the benefits expected and provides an indication of their value where possible.

The 'Location Strategy' states that the greater use of shared, integrated spatial information through the availability of consistent data supported by a coherent infrastructure may be expected to deliver benefits to a wide range of stakeholders across the economy:

- citizens and communities will benefit through better targeted services

- public sector service providers will share information across partnerships to provide more integrated, joined-up services and improved operational responses to emergencies
- public policy makers will be able to better design and target policy interventions
- the third sector will be able to partner more efficiently through more information sharing
- the private sector will be able to complement the public sector more effectively in the creation of place based information and associated value added services.

In other words, improved access to and use of place based information should also result in improved policy design, targeting, implementation and evaluation, resulting in improved outcomes and reduced costs.

## Option 2: Implementation

The focus is on environmental information covered by the Directive.

The Commission's XIA identified a number of benefits, the quantification of which presented a challenge "as the benefits of more information being available only become apparent after a certain period of time and because they also depend on many factors coming into play." The XIA estimated quantified benefits to be of the order of €1.2-1.8 bn p.a. (Annex 5 presents extracts from the assessment detailing the methodology used).

These benefits are expected to accrue gradually over time as the implementation of INSPIRE progresses, reaching their full effect when INSPIRE is fully implemented. Compared to the XIA's estimate of costs (€200m – 300m pa over 10 years), suggesting a benefit: cost ratio of around 6 (at the midpoints). These estimates need to be treated with caution given the difficulties with their estimation but the orders of magnitude difference between costs and benefits were deemed sufficient to support the development of the Directive.

Based on the Commission's approach, potential benefits to UK public authorities are as follows:

INSPIRE BENEFITS	£m (p.a.)
More efficient EIAs and SEAs	10-20
More efficient environmental monitoring and assessment	10
More cost effective expenditure on environmental protection	30
More cost effective implementation of EU environmental Directives	5
More effective implementation of UK environmental projects	1.5
Reduced duplication of spatial data collection	2-25
Improved delivery of risk prevention policies	12-40
TOTAL (£m per annum)	70-130

Annual average benefits are estimated to range from £70-130m p.a., once policy is fully implemented. The present value of total benefits over 10 years, (assuming these benefits are only likely to accrue starting in 2015/16 and not fully realised until 2018/19 onwards), discounted at a rate of 3.5%, is £152m

There is a tendency to focus on the benefits to the public sector. Yet there are good prospects for gains by the private sector. The Commission's XIA argued that there were undoubted efficiency savings for industries that are, for instance, active in the utilities, oil and gas, communications, fishing, farming and forestry, mining, drilling, dredging and quarrying, in tourism, property development; surveying, insurance, cable laying, architecture and engineering sectors. Equally important are specialist information services opportunities including:

- better and more accurate analysis of different financial markets by commercial data users, leading to greater competition; and

- the creation of new products and services by commercial value added information providers, such as in the sectors of house selling, insurance, travel, logistics, telecommunications and tourism.

Experience elsewhere in the world has shown that a thriving market for added value services can develop on top of more readily accessible and usable public sector spatial data. It is reasonable to assume that the implementation of the strategy would contribute to more vibrant economic activity in this area. This assumption is supported by the private sector's positive reaction to the INSPIRE initiative<sup>11</sup>.

The recent report on the response to the summer flooding in 2007 ('Pitt Review')<sup>12</sup> indicates the value of such information and the benefits of improvements in the quality and accessibility of these data.

The Pitt Review estimated that "the insurance industry expects to pay out over £3 billion –other substantial costs will be met by central government, local public bodies, businesses and private individuals". Even modest improvements in efficiency can yield significant savings, notwithstanding the additional benefits from reducing the wider social and personal impact from such emergencies through speedier and more effective response.

The Report recognized that "during the emergency itself, there were excellent examples of emergency services and other organizations working well together, saving lives and protecting property. However, this was not always the case; some decision making was hampered by insufficient preparation and a lack of information. Better planning and higher levels of protection for critical infrastructure are needed to avoid the loss of essential services such as water and power. There must be greater involvement of private sector companies in planning to keep people safe".

The Atlantis Programme brings together a number of government organizations, including the British Geological Survey, the Centre for Ecology and Hydrology, the Environment Agency, the Met Office, Ordnance Survey and the United Kingdom Hydrographic Office, in order to improve government's topographical, geological and hydrological data. The Atlantis Programme shows that government organizations can work together successfully and deliver better modeling improved data quality and cost savings.

Recognition of the value of shared spatial information underpins several of the recommendations in the Report.<sup>13</sup>

Members of the public will benefit from vastly increased access to environmental information. Use of the internet has become widespread and as recognised in the recent report by Mayo and Steinberg (the "Power of Information")<sup>14</sup>, citizens are making their own information and using information made by others to inform their decisions. Implementing the Directive provides a web based channel for aggregating and sharing information with the public. Home Information Packs will be easier to produce and could contain a richer mix of information. Similarly, home insurance will be based on more accurate information as information on risks, such as flooding, subsidence, meteorology, and so on, become more accessible and usable.

## **J: Specific Impact Tests**

### Competition Assessment

---

<sup>11</sup> Cf. results of the INSPIRE Internet consultation and public hearing.

<sup>12</sup> Cf. footnote 2

<sup>13</sup> RECOMMENDATION 3: The Met Office should continue to improve its forecasting and predicting methods to a level which meets the needs of emergency responders. RECOMMENDATION 4: The Environment Agency should further develop its tools and techniques for predicting and modelling river flooding, taking account of extreme and multiple events and depths and velocity of water. RECOMMENDATION 5: The Environment Agency should work with partners to urgently take forward work to develop tools and techniques to model surface water flooding. RECOMMENDATION 6: The Environment Agency and the Met Office should work together, through a joint centre, to improve their technical capability to forecast, model and warn against all sources of flooding.

<sup>14</sup> [www.commentonthis.com/powerofinformation/](http://www.commentonthis.com/powerofinformation/)

The partial Impact Assessment which accompanied the draft Directive in 2005 raised the concern that the Proposal, as then currently drafted, could have conflicted with competition law. In essence, the Proposal could have been interpreted such that public sector organisations are required to provide their data free of charge to other public sector organisations. Under competition law private sector organisations may expect to have access to the data on the same terms and conditions, i.e. for free. This would have had severe impacts on the revenue of public sector organisations that trade in information to the detriment of INSPIRE. This risk has now been removed as the Directive permits public authorities to charge for services (see section H above).

#### Small firms

INSPIRE deals with the sharing of public sector information between public authorities and the provision of free view services to the public. Hence, the assumption is that there will be minimal impact on Small and Medium sized Enterprises (SMEs). However, that is not to say there are no risks. Companies such as Multimap.com<sup>15</sup>, have developed services that provide the public with free view of public sector data sets. Whilst these view services are free to the public, the companies themselves license (i.e. pay for) the data from public sector data providers, recovering their costs and making a return on investment via advertising revenues. However, the obligation on public authorities to provide free (of charge to the public) view would reduce the scope for commercial companies to do likewise. Opportunities for the private sector are provided under the PSI Directive, which allows for the re-use of public sector information; for example in the provision of value added services additional to what the public sector provides.

#### Legal aid

There will be reporting obligations on public authorities but these do not result in criminal sanctions or civil penalties.

#### Sustainable development, carbon assessment and other environment

Reference has already been made to the benefits associated with improved EIAs and SEAs. Sharing and combining datasets on environmental spatial information will support improved planning, for example in relation to climate change adaptation, and the protection of local biodiversity and endangered habitats.

#### Health

The Directive focuses on environmental information. Combining this information with, say, spatial datasets on health, and local communities, offers the possibility of analysis of health inequalities and improved design and targeting of policy interventions. The health of individuals is shaped in part by their local built and natural environment, and cultural and social factors. There is considerable potential for locally-generated initiatives to improve health and which need to be tailored to local circumstances.

#### Race, Disability, and Gender Equality

No identified impacts other than through the potential to improve policy design. The location council will have regard to the needs of disabled people, including the partially sighted when developing their proposals on public view access.

#### Rural proofing

No identified impacts on rural areas as such, other than the potential to improve policy design through sharing and combining spatial datasets.

### **K: Summary and Recommendation**

The Government shares the Commission's views of the importance of spatial information in underpinning the development and delivery of local, regional, national and EU policies. The current situation including lack of harmonisation and poor interoperability leaves a lot to be

---

<sup>15</sup> <http://www.multimap.com>.

desired. Voluntary arrangements have met with mixed success and the Directive is consistent with the direction of travel signalled in the Government's Location Strategy.

There remains some uncertainty over the precise costs and benefits associated with implementation but it is believed that the information available is sufficient to make an informed decision over the preferred course of action.

The Commission's XIA estimated quantified benefits to be of the order of €1.2-1.8 bn p.a. compared to costs of between €200 - 300 p.a.

For the UK the incremental, one-off, costs of implementation are estimated to be in the region of £55m - £61m, which is believed to be a prudent estimate. On the basis of the evidence available these would seem to be more than outweighed by the potential benefits which, solely in terms of benefits to public authorities conducting EIA/SEAs could be around £100m p.a., and considerably more if the benefits from improved public policy design and implementation, private sector access and the public are included.

## Specific Impact Tests: Checklist

Use the table below to demonstrate how broadly you have considered the potential impacts of your policy options.

**Ensure that the results of any tests that impact on the cost-benefit analysis are contained within the main evidence base; other results may be annexed.**

Type of testing undertaken	<i>Results in Evidence Base?</i>	<i>Results annexed?</i>
Competition Assessment	Yes	No
Small Firms Impact Test	Yes	No
Legal Aid	Yes	No
Sustainable Development	Yes	No
Carbon Assessment	Yes	No
Other Environment	Yes	No
Health Impact Assessment	Yes	No
Race Equality	Yes	No
Disability Equality	Yes	No
Gender Equality	Yes	No
Human Rights	Yes	No
Rural Proofing	Yes	No

### Some Key Current UK Spatial Data Activities

- The Pan Government Agreement for central government provides central government with access to Ordnance Survey spatial data;
- The Mapping Services Agreement for local government provides a licensing framework for the delivery of digital mapping, geographical and spatial information services on behalf of all local government.
- The National land and property gazetteer (NLPG) is a centrally managed, comprehensive and up to date address database for England and Wales which facilitates the sharing of data amongst local authorities
- The National street gazetteer (NSG) is a centrally managed, comprehensive and up to date street database for England and Wales which facilitates the sharing of data amongst local authorities
- The National Interest Mapping Services Agreement (NIMSA), under which ODPM provides funding for certain Ordnance Survey activities deemed to be in the national interest that cannot be justified commercially<sup>16</sup>. Glgateway<sup>17</sup>, a one-stop shop for discovering what information exists and how it can be accessed, is funded through NIMSA;
- Project Acacia<sup>18</sup>. . This project, completed in 2004 investigated the need to standardise the common address framework required across government;
- The Digital National Framework (DNF). This aims to promote geoinformation interoperability and reuse at national dataset level (e.g. Integrated Coastal Zone mapping) and across individual records (e.g. land and property such as Land Registry, Access Land mapping, Local Authority records)<sup>19,20</sup>;
- Maps on Tap led by ODPM. A common technical infrastructure and one-stop shop for access to governmental spatial information through a user-friendly map base;
- The Spatial Information Repository (SPIRE) programme led by Defra. This joins up the provision and use of spatial information across the Defra network, and has involved the creation of a spatial data infrastructure for participating organisations;
- MAGIC<sup>21</sup>. This Defra-led project provides a one-stop shop for rural and countryside information, bringing together definitive rural designation boundaries and information about rural land-based schemes into one place. It is currently being extended to include Great Britain and marine datasets;
- “What’s in your backyard?”<sup>22</sup> from the Environment Agency. This provides mapped information on the state of the environment at any postcode.
- The Met Office are involved in substantial ongoing work to co-ordinate access to meteorological data and products, and to ensure inter-operability;
- Integrated Coastal Zone mapping (ICZ). This has led to agreed standards in making the land and marine environmental data from Ordnance Survey and the UK Hydrographic Office interoperable for the first time;

<sup>16</sup> It was the subject of a recent public consultation, the results of which should be available early to mid May 2005 with a Government response expected in June 2005.

<sup>17</sup> <http://www.gigateway.org.uk>.

<sup>18</sup> <http://www.ordnancesurvey.co.uk/oswebsite/aboutus/reports/acacia/index.html>.

<sup>19</sup> DNF White Paper: [http://www.ordnancesurvey.co.uk/aboutus/reports/dnf\\_white\\_paper.pdf](http://www.ordnancesurvey.co.uk/aboutus/reports/dnf_white_paper.pdf).

<sup>20</sup> European Commission. (2003) Spatial Data Infrastructures in the United Kingdom. State of Play Spring 2003. <http://www.ec-gis.org/inspire/>.

<sup>21</sup> <http://www.magic.gov.uk>.

<sup>22</sup> [http://216.31.193.171/asp/1\\_introduction.asp?language=English](http://216.31.193.171/asp/1_introduction.asp?language=English).

- Marine Data and Information Partnership (MDIP) is aiming to deliver a marine spatial data infrastructure;
- Vertical Offshore Reference Framework (VORF) is a UKHO project to create a seamless sea level surface for the UK continental shelf;
- The Integrated Coastal Hydrography<sup>23</sup> project provides a metadata discovery portal to identify hydrographic surveys undertaken on the UK continental shelf.

---

<sup>23</sup> <http://www.coastalhydrography.com>.

## Timeline

### INSPIRE Roadmap – forecast UK implementation dates

Note: all future dates below are dependent on a programme of development work, legal steps and translation and are therefore subject to revision Regular text indicates date adopted, **bold text** date of implementation

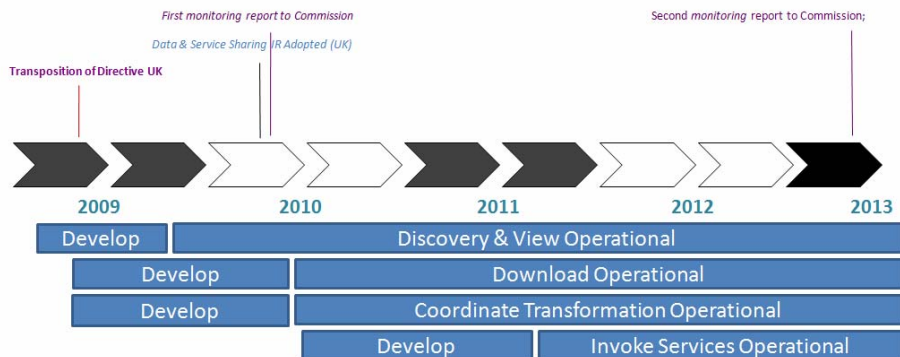
Date [Best Estimate for UK adoption]	Description	Comment
2007-05-15	Entry into force of INSPIRE Directive	
2007-08-15	Establishment of the INSPIRE Committee Art. 22§2	
2009-05-15	UK Transposition Art. 24§1 - with Metadata [Discovery] Implementing rules Art 5§4	This is the target date
2009-10-15	Monitoring and Reporting Implementing Rule Adopted Art.21(4)	
2009-10-15	Discovery and View Implementing Rule Adopted Art. 16	
2010-04-15	Data & Service Sharing Implementing rules Adopted Art. 17(8)	
2010-05-15	Annex I Implementing rules adopted Art. 9(a)	
2010-05-15	Coordinate Transformation Implementing Rule Adopted Art 16(a).	
2010-05-15	Download Service Implementing Rule Adopted Art.16	
2010-12-24	<b>Metadata [Discovery] Implementing rules compliant for Annex I &amp; II data</b>	<b>2 years from European implementation date</b>
2011-08-15	Invoke Service Implementing Rule Adopted Art. 16	
2011-12-15	<b>Annex I Implementing rules compliant for new data</b>	<b>2 years from European implementation date</b>
2013-05-15	Annex II & III Implementing rules Adopted Art. 9(b)	
2013-12-24	<b>Metadata [Discovery] Implementing rules compliant for Annex III data</b>	<b>5 years from European implementation date</b>
2014-12-15	<b>Annex II &amp; III Implementing rules compliant for new data</b>	<b>2 years from European implementation date</b>
2016-12-15	<b>Annex I Implementing rules compliant for existing data</b>	<b>7 years from European implementation date</b>
2019-12-15	<b>Annex II &amp; III Implementing rules compliant for existing data</b>	<b>7 years from European implementation date</b>

In most cases UK implementation dates are 3-5 months later than OJEC publication dates.

# Timelines for UK adoption and compliance 2009 – 2020

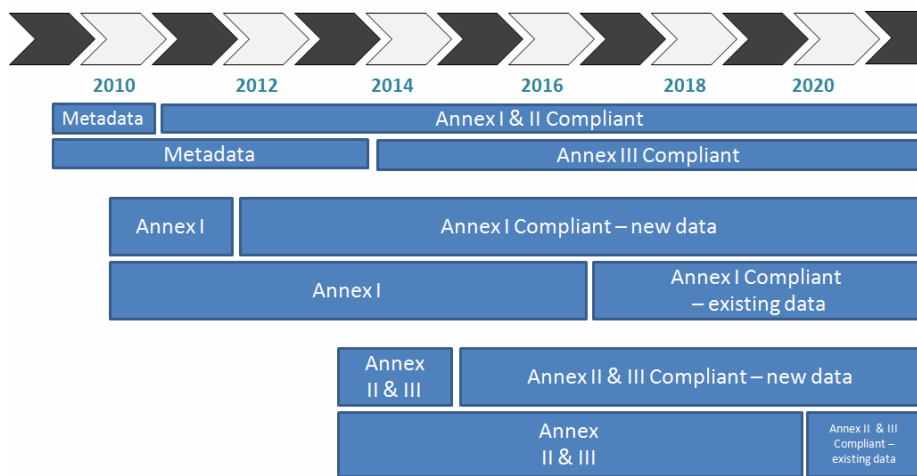
Note all future dates are subject to change

## Timeline: Network Services



Note: develop and operational start dates are the earliest possible commencement dates

## Timeline: Spatial datasets



Stakeholders consulted on the INSPIRE Directive

Association for Geographic Information;  
British Geological Survey;  
Cabinet Office;  
Central and Local Government Information Partnership;  
Department for Business Enterprise & Regulatory Reform  
Department of Communities and Local Government  
Department for Innovation Universities and Skills  
Department for Transport  
The Devolved Administrations of Northern Ireland, Scotland and Wales  
Environment Agency;  
HM Treasury;  
Improvement and Development Agency;  
Intra-governmental Group on Geographic Information;  
Land Registry  
Local Government Association  
Met Office;  
Ministry of Defence;  
National Archives  
Office of the Deputy Prime Minister;  
Office for National Statistics;  
Ordnance Survey;  
UK Hydrographic Office.

## List of stakeholders consulted during the development of the Location Strategy

### Public Sector

Name	Job title	Organisaton
Mr Neil Ackroyd	Director of Data Collection and Management	Ordnance Survey
Mr Tim Allen	Programme Director and Intelligence	Local Government Association
Mr Robin Bigger		Northern Ireland Fire and Rescue Service
Mr Stan Brown	Business Development Director	Ordnance Survey of Northern Ireland
Mr Andrew Burchell	Chief Operating Officer	Department for Environment, Food & Rural Affairs
Ms Kate Chamberlain	Chief Statistician	Welsh Assembly Government
Mr Andrew Trigg	Director of Geographic Information	Land Registry
Mr Robert Devereux	Director General	Road Transport, Aviation and Shipping Group, Department for Transport
Mr Mark Hutchinson	Acting Chief Executive	Met Office
Professor Denise Lievesley	Chief Executive	NHS Health and Social Care Information Centre
Mr Duncan Macniven	Registrar General	General Register Office for Scotland
Mr Graham Jenkinson		Office for National Statistics
Mr Richard McCarthy	Director General, Sustainable Communities Group	Department for Communities & Local Government
Ms Diana Murray	Secretary	Royal Commission on the Ancient and Historical Monuments of Scotland
Brigadier Nick Rigby	Director, Intelligence Collection Strategy and Plans	ICSP, Ministry of Defence
Mr Alan Radford		Met Office
Mr Mike Robinson	Chief Executive	UK Hydrographic Office
Mr David Palmer		Environment Agency
Mr John Pepper		UK Hydrographic Office
Mr Andrew Stott	Deputy CIO	Delivery & Transformational Unit, Cabinet Office
Commander Janet Williams		Metropolitan Police

### Private Sector & Academia

Name	Job title	Organisation
Ms Angela Baker		Association for Geographic Information
Dr Robert Barr	Managing Director	Manchester Geomatics Ltd
Professor Mike Batty	Director, Centre for Advanced Spatial Analysis	University College London
Mr James Cadoux-Hudson	Director	Tangram Associates
Mr Jac Cartwright	Director	Spatial Insights Ltd

Mr Andy Coote	Consultancy Services Director	ESRI (UK) Ltd
Mr Ian Drury		British Telecom plc
Mr Mike Fishwick	Head of Commercial Data	Yell plc
Mr Martin Giel		South East Water
Mr Andrew Harrison	Director	Land Inform Ltd
Professor Mike Jackson	Director, Centre for Geospatial Science	University of Nottingham
Dr Alun Jones		GeoInformation Group
Mr James Kavanagh	Head Geomatics	Royal Institution of Chartered Surveyors
Dr Barry Leventhal	Chair	Market Research Society, Census & Demographic Group
Dr Helen Mounsey	Associate Partner	IBM Global Business Services
Mr Allan Rasmussen	National Board Director	Tele Atlas
Mr Peter Stibrany	UK Manager	MacDonald Dettwiler and Associates Ltd
Mr David Theriault	Director	Ten Sails Ltd
Mr Edward Ungar	Strategic Partner Development Manager	Google UK Ltd

The following stakeholders attended technical workshops to support the formulation of the Location Strategy for the United Kingdom:

#### Public Sector

Name	Job title	Organisation
Mr Steve Brandwood		Local Government Information House / IDeA
Dr Cameron Easton		Scottish Executive
Mr Keith Murray		Ordnance Survey
Mr Ed Parsons	Chief Technology Officer	Ordnance Survey
Mr James Proctor		Environment Agency
Mr Graham Vowles		Ordnance Survey

#### Private Sector

Name	Job title	Organisation
Mr Tony Black		Intelligent Addressing Ltd
Mr Steve Hawthorn		Infotech Solutions (UK)Ltd
Professor Mike Jackson	Director, Centre for Geospatial Science	University of Nottingham
Ms Audrey Mandela		MultiMap (UK) Ltd
Dr David Medyckyj-Scott		EDINA
Ms Sathya Prasad		Infotech Solutions (UK)Ltd
Mr Robert Southern		Informed Solutions Ltd
Mr Anthony Warner		MultiMap (UK) Ltd

## Estimating current expenditure on Spatial Information in the Public Sector

## Cabinet Office Geographic Information Survey

## Initial Capital Investment

Categories	Number of respondents in category	Cost (£M) <sup>24</sup>
£50, 000	86	2.15
£51, 000 to £150, 000	37	3.70
£151, 00 to £250, 000	7	1.40
> £250, 000	4	1.20
Total	134	8.45
Estimated total cost <sup>25</sup>		11.67
Estimated total cost per annum <sup>26</sup>		1.94

The assumptions made in estimating costs are detailed in the footnotes.

## Annual Maintenance Costs

Categories	Number of respondents in category	Cost (£M) <sup>27</sup>
< £10, 000	62	0.31
£10, 001 to £50, 000	58	1.74
£50, 001 to £100, 000	13	0.98
> £100, 000	11	1.38
Total	144	4.40
Estimated total cost <sup>28</sup>		5.65

The assumptions made in estimating costs are detailed in the footnotes.

<sup>24</sup> To estimate cost the middle point of the category is used as the multiplier, e.g. use £100, 000 for the '£51, 000 to £150, 000' category. For the category 'greater than £250, 000' as the two previous categories have used an interval of £100, 000 it is used for this category. Hence, the 'greater than £250, 000' category is assumed to be '£250, 000 to £350, 000'. Thus, an average figure of £300, 000 is used for this category.

<sup>25</sup> Only 134 out of 185 respondents answered this question. Assuming that the responses received are representative, the total cost is multiplied by 185/134 to give the estimated total cost.

<sup>26</sup> Cost per annum based on the assumption that infrastructure is upgraded every 6 years.

<sup>27</sup> To estimate cost the middle point of the category is used as the multiplier, e.g. use £75, 000 for the '£50, 001 to £100, 000' category. For the category 'greater than £100, 000' the previous category used an interval of £50, 000. Hence, an assumed range of £50, 000 is used for the 'greater than £100, 000' category. Hence, the 'greater than £100, 000' category is assumed to be '£100, 000 to £150, 000'. Thus, an average figure of £125, 000 is used for this category.

<sup>28</sup> Only 144 out of 185 respondents answered this question. Assuming that the responses received are representative, the total cost is multiplied by 185/144 to give the estimated total cost.

## Data Procurement / Annual Licensing Costs

Categories	Number of respondents in category	Cost (£M) <sup>29</sup>
< £20, 000	83	0.83
£20, 000 to £50, 000	26	0.91
£50, 001 to £100, 000	17	1.28
> £100, 000	20	2.50
Total	146	5.52
Estimated total cost <sup>30</sup>		6.99

The assumptions made in estimating costs are detailed in the footnotes.

## Number of GIS personnel (Staff Costs)

Categories	Number of respondents in category	FTE <sup>31</sup>
1 to 5	99	297
6 to 9	18	135
10 to 25	18	315
>25	19	617.5
Total	154	1364.5
Estimated total cost (£M) <sup>32</sup>		81.96

<sup>29</sup> To estimate cost the middle point of the category is used as the multiplier, e.g. use £75, 000 for the '£50, 001 to £100, 000' category. For the category 'greater than £100, 000' the previous category has used an interval of £50, 000. Hence, an assumed range of £50, 000 is used for the 'greater than £100, 000' category. Hence, the 'greater than £100, 000' category is assumed to be '£100, 000 to £150, 000'. Thus, an average figure of £125, 000 is used for this category.

<sup>30</sup> Only 146 out of 185 respondents answered this question. Assuming that the responses received are representative, the total cost is multiplied by 185/146 to give the estimated total cost.

<sup>31</sup> To estimate cost the middle point of the category is used as the multiplier, e.g. use 7.5 for the '6 to 9' category. For the category 'greater than 25' the previous category has used an interval of 15. Hence, an assumed range of 15 is used for the 'greater than 25' category. Hence, the 'greater than 25' category is assumed to be '25 to 40'. Thus, an average figure of 32.5 is used for this category.

<sup>32</sup> Based on an approximate figure of £50, 000 (salary and associated costs) for an HEO level GI analyst. Only 154 out of 185 respondents answered this question. Assuming that the responses received are representative, the total figure is multiplied by 185/154.

## GI Infrastructure Projects

Activity	Development / one-off costs (£Ms)	Development costs p.a. (£Ms) <sup>33</sup>	Ongoing maintenance costs p.a. (£Ms)
Pan Government Agreement	-	-	23.00
Mapping Services Agreement <sup>34</sup>	-	-	23.00
National Interest Mapping Services Agreement	-	-	13.70
Project Acacia <sup>35</sup>	18.00	3.00	2.00
Digital National Framework <sup>36</sup>	0.20	0.03	0.20
Maps on Tap <sup>37</sup>	4.00	0.67	0.70
SPIRE <sup>38</sup>	16.90	2.82	0.20
MAGIC <sup>39</sup>	0.50	0.08	0.10
What's in Your Backyard? <sup>40</sup>	3.50	0.58	-
Met Office interoperability activities		30.00	30.00
Integrated Coastal Zone mapping <sup>41</sup>	0.63	0.10	0.13
Marine Data Information Partnership <sup>42</sup>	0.50	0.08	-
Integrated Coastal Hydrography Project <sup>43</sup>	0.35	0.06	0.05
Vertical Offshore Reference Project <sup>44</sup>	0.28	0.05	0.03
National Assembly for Wales GI activities <sup>45</sup>	-	-	1.79
Total	44.85	7.48	94.9
Annual total			102.37

<sup>33</sup> Development costs expressed as per annum costs on the assumption that infrastructure would be upgraded every 6 years.

<sup>34</sup> Estimate.

<sup>35</sup> Costs that would be incurred to set up. This includes £1M that has already been spent on research.

<sup>36</sup> Implementation and development costs - in excess of £0.2M but not quantified.

<sup>37</sup> £2M spent to date with a further £2M earmarked.

<sup>38</sup> Programme costs over two years (2005-7).

<sup>39</sup> Cost to develop.

<sup>40</sup> £1.5M to develop: £2M to upgrade.

<sup>41</sup> Ongoing maintenance estimated as 20% of development costs.

<sup>42</sup> Expenditure to date.

<sup>43</sup> Ongoing maintenance estimated as 15% of development costs.

<sup>44</sup> Ongoing maintenance estimated as 10% of development costs.

<sup>45</sup> Does not include data costs.

## Programme Costs UKSDI

### Programme Costs (at August 2008)

Activity	Phase 1: Programme Initiation		Phase 2: Development		Phase 3: Implementation		Phase 3: Operation and ongoing development	
	FY 2008-09		FY 2009-10		FY 2010/11		FY 2011-12	
	Item	£k	Item	£k	Item	£k	Item	£k
Programme Management (EA & OS Secondees)	Programme Support (3FTE)	(250)	Programme support (4FTE)	350	Programme support (4FTE)	500	Programme support (4FTE)	500
Location Council Secretariat	1 FTE (from 01/01/09)	50	2 people full time	200	2 people full time	250	2 people full time	250
INSPIRE Regulation Unit	N/A	-	2FTE	200	2FTE	250	2FTE	250
Stakeholder Engagement	LC User Group Road shows Publications & Website	100	LC User Group, Road Shows, Publications & Website	100	LC User Group, Roadshows, Publications & Website	200	LC User Group, Roadshows, Publications & Website	100
Technical - INSPIRE Data Standards	Data developments scoping study	100	Dataset cleanup and linking and INSPIRE standards and data pilots and proof of concepts (3 pilots)	700	Dataset cleanup and linking and INSPIRE standards and proof of concepts (exemplars)	1000	Dataset cleanup and linking and INSPIRE standards	500
Technical - INSPIRE Network Services (INSPIRE DT Reps)	INSPIRE standards and prototyping	100	Hardware & software/resilience	700	Hardware & software - resilience	2100	Hardware & software - resilience	500
Prototype UK SDI Geoportal and network services (SPIRE)	Web Site	300	Ongoing development and operation	1000	Operation and development	1000	Operation and development	1000
Consultancy	Documentation	50	Documentation & support for users	50	Documentation & support for users	200	Documentation & support for users	200
Totals		700		3300		5500		3300
Cumulative total		£700k		£4.0m		£9.5m		£12.8m

7

## Annex 5

### Extracts from the Commission's Extended Impact Assessment

#### Quantitative benefit estimates (all figures €m per annum, 2003)

More efficient EIAs and SEAs	100-200
More efficient environmental monitoring and assessment	100
More cost-effective expenditure on environmental protection	300
More cost-effective implementation of the environmental Acquis	50
More effective implementation of EC projects	5-15
More effective expenditure on Trans European Networks	140
Reduced duplication of spatial data collection	25-250

Improved delivery of risk prevention policies	120-400
Improved delivery of health and environment policies	350
Total	1190–1 800

### *Environmental impact assessment*

INSPIRE is likely to be of particular use to organisations, both in the public and the private sectors, which carry out Environmental Impact Assessments (EIAs) and Strategic Environmental Assessments (SEAs).

A questionnaire of the Commission's services of EIA and SEA experts operating in the EU-25 suggests that the average cost of preparing EIA and SEA reports was €73,000. Thus the total cost for carrying out these environmental assessments in the Member States ranges between €950-1,750m. The same survey reveals that problems related to the access and use of spatial data increase the costs of EIA and SEA studies by, on average, 5.4%. If these costs could be removed savings of €50-95 m per annum could be achieved. The survey suggests that problems related to the availability, quality and use of spatial data increase the time needed to produce EIA and SEA reports on average by 8%. The benefits which are expected to result from the INSPIRE initiative are, therefore, very likely to represent an underestimation and to become more important in the future. For this reason, we work with figures taken from the top end of the above range, given a rounded saving of €100 m per annum.

These savings represent an underestimation as they do not take into account the increase of SEA's due to the entry into force of the SEA Directive in 2004 and only take very partial account of the EIA's that take place at regional and local level. For a number of countries, it is judged that the estimates of the number of EIA's should at least be doubled.

Therefore, the total savings could run up to € 200 m per annum.

### *Environmental monitoring and assessment*

The costs of monitoring and assessment of the environment in the pursuit of environmental policy are in the UK some €160m a year. If this expenditure is grossed up over the EU-15 as a whole (pro-rata to GDP), the total is some €1bn. Without INSPIRE much of the monitoring data collected for the primary purpose of monitoring compliance against discharge limits or environmental quality standards would remain costly or impossible to combine for secondary environmental assessment purposes, largely due to inconsistent specifications of data or systems. It would also remain difficult to combine different data for reporting on the state of the environment at a regional, national or international level. Based on similar experience from many organisations, the estimated efficiency improvements arising from harmonisation, consistent metadata, more efficient data handling, and increased quality would lead to efficiency gains of at least 10%, which would be worth €100 m per annum.

### *Environmental protection*

Industry across the European Union spends an estimated €33bn per annum on environmental protection measures. A reasonable estimate is that 10% of this total spending relates to data handling, primary and secondary use. The need for investment in mitigation or prevention measures are often based on the results of environmental risk assessments (ERAs) of the discharges arising from industrial installations to air, water and/or land. Data required to carry out ERAs of discharges is often lacking, requiring very expensive data collection campaigns. Assuming a 5% efficiency gain from INSPIRE being in place by making

environmental data of known location, quality and standards readily accessible, that would be worth €150 m a year.

Also the public sector makes significant expenditure on environmental protection measures. As an example of this expenditure, it is estimated that the cost of implementing the Directive 2002/49/EC, relating to the assessment and management of environmental noise, is of the order of € 10-15 million per annum for conurbations and € 15 m per annum for the 150 airports in Europe, totalling €25-30 million. Another example relates to reporting. The cost of the administration and reporting of the implementation of the Water Framework Directive in England and Wales alone is in the order of € 15 m per annum with similar costs pro rata for other European countries. A conservative estimate that another € 150 m a year can be saved due to improved reporting and monitoring, leading to € 300 m a year total savings.

### *EC projects*

Estimates from EUROSION suggest that additional costs of €285,000 have been incurred because of the lack of good metadata, dissemination mechanisms, and restrictive access conditions, which have caused delays in the project and required the ultimately that downgraded data had to be used so that it could be released by the project owners. The economic costs of this represents some 13% of the database costs of the project, but there are also potentially negative policy implications by the use of downgraded data. In addition, lack of provision for continued data management and preservation often means that data produced during a project is lost to future projects in the same work area. This experience is common among EC (and national) projects. It would be reasonable to consider that the EC would save between 5-10% of its project costs through better data management, and by not funding parts of projects that require the collection of data already existing.

A list of other projects that would benefit from INSPIRE includes: GMES (€380m); Forest Focus (€90m); Land Parcel Identification system (€300-500m); ESPON (€12m); and CLC/IMAGE 2000 (€10m) (the figures in brackets represent the expenditure on each). This gives a total expenditure of €800m-1.3bn. Data harmonisation would significantly increase the efficiency of these investments. Even assuming a low 5-10% savings, this would be worth €40-130m, or (rounded), €5-15m per annum over 10 years.

### *Adoption of the environmental acquis*

EU accession countries are undertaking at the present time major efforts to align their legal framework to the Community *acquis*, of which environmental legislation is one of the most difficult areas. The estimated cost of adopting the Environmental *Acquis* is €80-110 bn over the next 10 years, or €8-11 bn per annum<sup>31</sup>. A reduction in these costs of 5% would be a reasonable assumption. Taking a conservative approach, 0.5% savings, would be worth €50m a year. The anticipated benefits should come from efficiency gains when implementing environmental management, monitoring and reporting in the accession countries. Some accession countries like Poland and Hungary recognise this and are planning or preparing the implementation of components of spatial data infrastructures.

### *Benefits from Extension of INSPIRE to other Sector Themes*

Although the emphasis throughout this assessment is on the environmental sector, it may be useful just to give an example of another sector that could benefit from INSPIRE. Network investments make considerable use of GIS. Thus if an improvement in information reduces the costs of the EU programmes there could be significant efficiency savings, e.g. between 1993 and 2000, the European Investment Bank has financed Trans-European Networks transport projects with a total cost of € 144 bn, approving loans for €43.6 bn of which €30.5 bn have already been signed. In the Accession Countries, the EIB has signed transport infrastructure loans for €5.8 bn (source EIB, 2001). If even only 1% of these investments

could be saved for example in the analysis stage of evaluating the environmental and economic impacts of these projects, that alone would be worth €1.4 bn, or € 140 m per annum.

### *Duplication of data collection*

Data collected for environmental purposes can be useful both for the environment and for other sectors. For example, the first CORINE Land Cover inventory for EU15 and the Accession 10 countries is made available at marginal costs for non-commercial use by the EEA at small scale, but the larger scale data is only made available by each contributing institution at national or regional level with widely different conditions. As a result, an industrial user in Germany who needed land cover data for Germany and for all its neighbouring countries to develop a mobile phone network was obliged to address each neighbouring country individually and start negotiations for access to the data. Because of difficulties caused by the lack of a spatial data infrastructure, the user eventually decided that it would be more cost/time effective to simply duplicate the work already done at national level by the different countries. Costs of CORINE land cover mapping for Germany are estimated around €2 m.

Approximately 5- 10 % of the more than 500 requests per year received by the EEA for the re-use of CORINE data could not be solved and are potential cases for duplication of work similar as described above. The cost for producing CORINE land cover for EU25 is €25 m. €25 m therefore represents a reasonable estimate of annual duplication cost for land cover data. The SDI State of Play project conducted by the Commission reveals that similar duplication also occurs for other spatial data sets and for other sectors in most of the EU 25 countries. Given the huge costs of spatial data collection, potential savings are very important and assuming that €250 m per annum can be saved in the EU25 due to reduction of data duplication is rather conservative.

### *Risk prevention*

A major area that would benefit from the implementation of INSPIRE relates to the prevention, preparedness and response to natural, man-made and other risks and the improved prevention of natural disasters, many of which have social underpinnings (e.g. development in flood-prone areas, deforestation, and so on).

While much work is needed to integrate risk prevention, mitigation and preparedness throughout the environmental management and planning process, it is important to recognize the potential contribution of early warning and rapid response information systems to this area.

If GMES and INSPIRE had been in place in 2002, it likely that:

- impact scenarios, using modelling based on the various INSPIRE components could have been developed, and mitigation measures taken well in advance, hence, strengthening prevention;
- the preparedness of the civil protection and other competent authorities would have been better, resulting in less loss of life and less deployment costs, i.e. there would have been a more efficient emergency response;
- the costs for recovery/reconstruction could have been reduced or at least the rebuilding would take into account the scenario outputs, hence, avoiding the extensive use of the precautionary principle.

A reasonable estimate of the savings possible would be 2-4%. Combining this with a

conservative estimate of €6-10 bn per annum of potential damage across Europe due to natural hazards, would result in savings of €120-400 m per annum and, crucially, lives saved.

### *Health and environment policy*

Better information is at the basis of the approach advocated by the European Health and Environment Strategy, allowing the development of new policies that reduce the impact of environmental pollution on health. Such new policies could, for example, improve the identification of those at risk of asthma and target measures to reduce those risks or 'hot spots'. Across Europe, it is estimated that 10% of children have asthma, with an annual welfare cost, in terms of discomfort, lost schooldays, inconvenience to parents, estimated to cost €5 bn for the UK alone. If this figure is grossed up across the EU-15 (pro-rata to GDP), the total annual cost might be €35 bn. Even a 1% improvement in policy delivery due to INSPIRE would be worth €350m a year.