
Public Data Group

Business Case

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1 Benefits of making specific Met Office, Ordnance Survey, Companies House and Land Registry data available as Open Data

1.1 Introduction

1.1.1 Open Data may be the most powerful lever of 21st century public policy: it can make accountability real for citizens; it can improve outcomes and productivity in key services through informed comparison; it can transform social relationships – empowering individuals and communities; and it can drive dynamic economic growth.

1.2 The Growth Argument for Open Data

1.2.1 Governments across the world – from the USA to Kenya – are increasingly recognizing the benefits of Open Data, making Public Sector Information available for use and reuse by all interested parties. A key driver to developing the digital content market (itself expected to be worth \$36 billion globally by 2014, up from \$16.7 billion in 2009¹), boosting informatics and analytical capacity and generating new businesses and jobs. In turn these economic benefits improve customer welfare by providing consumers with more choice and Government with better value for money. Speaking at the recent EU Digital Assembly, Severin Naudet summarized the value of PSI re-use and Open Data during the workshop: “Open Data is a digital application of democracy, which will fuel a major share of growth and jobs creation.”²

1.2.2 The Office of Fair Trading conducted a large scale study on the commercial use of public sector information in the UK in 2006³. They estimated the net value of PSI in the UK to be worth – at that time – approximately £590 million per year. The OFT concluded that this net value was constrained by three main limitations: unduly high pricing (worth £20 million per annum), restrictions in downstream competition (£140 million) and failures to exploit PSI (£360 million). Resolving these problems was anticipated to generate a total net value of PSI of £1.1 billion per annum.

1.2.3 Similarly, McKinsey & Company estimated that Big Data (including, but not limited to, open data) was worth €250 billion across Europe⁴. Graham Vickery, Head of the Information Economy Group and programme director for OECD information technology estimated⁵ direct annual turnover of firms in the existing Public Sector Information sector to be worth €28 billion, with annual growth of 8% - one of the fastest growing sectors in the EU. Total impact of the PSI industry (including indirect effects and positive spillovers) was estimated to be worth €140 billion per year across Europe.

1.2.4 Forecasting the net value – especially the growth potential – of Open Data is not an easy task, however. As such, the range of estimates is wide.

1.3 The PDC data package

1.3.1 To support the growth of high-value data businesses the Government is making available for free a range of core reference data sets. In addition it is announcing the creation of a

¹ http://pro.gigaom.com/2010/03/paid-content/?utm_source=gigaom&utm_medium=crosspost

² http://ec.europa.eu/information_society/events/cf/daa11/item-display.cfm?id=5963

³ <http://www.offt.gov.uk/OFTwork/markets-work/completed/public-information>

⁴ http://www.mckinsey.com/mgi/publications/big_data/

⁵ <http://www.oecd.org/dataoecd/41/52/44384673.pdf>

Data Strategy Board and a Public Data Group which will maximise the value of data the public sector buys from the Met Office, Ordnance Survey, the Land Registry and Companies House, including releasing some of their data for free.

1.3.2 This business case shows how the costs of releasing the datasets described below as Open Data are outweighed by the benefits:

- The Met Office will, from today and for the first time, release under the Open Government Licence (OGL) as machine-readable and machine-processable for unrestricted use, the following **Public Weather Service weather forecast and real-time observation datasets**, which together represent the largest volume of high quality weather data and information made available by a national meteorological organisation anywhere in the world:
 - Forecast data of: weather type, temperature, wind speed, wind direction, wind gust, visibility, humidity, probability of precipitation, feels like temperature and UV index at 3 hourly intervals out to 5 days for 5,000 UK locations, updated hourly;
 - Forecast data of: maximum daytime temperature, minimum night time temperature, midday and midnight: wind speed, wind direction and wind gust, humidity, and visibility and for each 12 hour day/night period: probability of precipitation, prevailing weather type and maximum UV index for 5 days for 5,000 UK locations, updated hourly; and
 - The last 24 hours of observed weather, temperature, wind speed, wind direction, wind gust, visibility, pressure, pressure tendency for approximately 150 UK sites.
- Met Office will also run a competition to design a Met Office API solution which will help developers create new and innovative applications using Met Office data⁶.
- The Data Strategy Board and Met Office will also work together with the aim of creating and releasing for re-use under the Open Government Licence over the next 12 months data which represents other services provided to the public as part of the Public Weather Service, subject to development of an acceptable business case.
- From January 2012, Land Registry will make available "**Price Paid information**" showing all **residential property sales in England and Wales at address level**. This will be downloadable for re-use, in a re-useable format under the OGL, and updated monthly.
- Land Registry will also make available for free, downloadable for re-use in an accessible and re-useable format under the OGL the following data, updated monthly:
 - Number and types of applications by customer by month;
 - Number and types of transactions for value by customer by month; and
 - Number of applications in England and Wales, by region and district by month; and
 - Number of searches by month (which can be a leading indicator of housing market movements).
- Ordnance Survey has committed to working with Local Authorities to enable the release of Local Authorities' "**Public Rights of Way**" data as open data.
- Ordnance Survey has also committed to work with Natural England to make available as part of OS OpenData a dataset of National Trails, for delivery in April 2013.

⁶ Three winners will be chosen who will receive a cash prize in return for Met Office having rights to use and further develop the API

- Companies House will develop a free downloadable bulk data file for [open] re-use which includes Company name, number, registered address, registration date, filing status and SIC code. The Data Strategy Board and Companies House will also consider subsequent release later in 2012 of directors' and office-holders' details.
- From Autumn 2011, data from local authorities, Ordnance Survey and Royal Mail has been brought together to form the National Address Gazetteer, a single, definitive address register. This is **the first time that the England and Wales has had an authoritative source of spatial address data.**
- **Postcode information can be downloaded for free re-use via OS OpenData** (CodePoint-Open)
- Any user can access data from the **National Address Gazetteer for free to initially test, evaluate and develop** into new and innovative products.
- The Government has asked Ordnance Survey and Royal Mail to:
 - simplify and align their licence terms for development & testing
 - provide greater support and ease of access for developers & innovators
- The Government has also asked Ofcom, the new regulator for postal affairs, to review the licensing framework for the Postcode Address File.

1.3.3 The following analysis will show the costs and benefits of releasing the detailed package above as data free at the point of use. Section 2 takes a detailed look at the cost implications for the four organisations releasing datasets, whilst section 3 sets out the benefits of the availability of the datasets as Open Data.

1.3.4 The headline findings show a net benefit to releasing this data as Open Data. The costs and benefits that can be monetised are summarised below:

Table 1.1

Summary	20 year total (NPV)					
	£m	Cost	Benefits			
			Direct Benefit	Additional Welfare Benefit		
			low scenario	central scenario	high scenario	
OS						
LR		8.5	7.4	4.7	7.8	21.4
MO		0.1	50.8	0.0	0.1	0.2
CH		0.5	0.5	0.3	0.5	1.4
ALL						

2 Costs and implications

2.1 Introduction

This section sets out:

- ShEx's assessment of the financial impact, based on information provided by the businesses and where necessary our extrapolations; and
- the calculation of the net present value of the financial impacts and sensitivities.

2.2 Key assumptions

- For modelling purposes, all financial impacts will only be incurred from 2012/13 onwards (i.e. an assumed implementation date of April 2012)
- Where figures relating to setup costs, revenue losses and ongoing costs have been provided by the four Trading Funds – Met Office, Land Registry, Ordnance Survey and Companies House these are indicated by "Company Forecasts" throughout the document. These figures have formed the basis for the calculations in the business case.
- The financial information provided by the Assets is management's current best estimation of potential financial impacts, recognising that, with time, this will become more refined and granular
- This paper does not examine the funding implications of providing a Data Package (both on the Assets' cash reserves nor potential Data Strategy Board free data funding) – see separate Affordability Analysis paper

2.3 Assessment of the financial impact

2.3.1 Ordnance Survey

- OS will enable PRoW data to be released from LAs (who own the data) as Open Data (under OGL) but OS will not undertake any additional work to create a Public Rights of Way dataset
- In effect, this means the estimated cost to OS will be:

Ordnance Survey (£)	Company forecasts				
	2012/13	2013/14	2014/15	2015/16	2016/17
Ordnance Survey has committed to working with Local Authorities to enable the release of "Public Rights of Way" data as Open Data. (p.a., if data not worked on)					

Assumptions

- Data provided in a format which requires work by Third Party.
- No work completed on the PRoW dataset to work with 25k raster and other OS leisure products as part of Open Data package

2.3.2 Met Office

- From discussions with MO management, we have made a significant adjustment and point of note to the potential financial impact information provided by the management team:
 - **'Revenue loss' from Existing 5K site data** has been adjusted to nil throughout the forecast period. This is because of this estimated revenue loss:
 - i. some revenue loss is already included in their current business plan and therefore already captured; and
 - ii. the remainder (and majority of 'revenue loss') is revenue that MO have identified as potential revenue the MO may have captured if they had hit their business plan 'stretch case' but will no longer be able to target (i.e. impact is on ability to grow revenue beyond base case plan). As this related to the MO's business plan stretch case and not their base case, it has not been included as a cost. In addition, management recognise that although the opportunity to capture some upside revenue has gone, there are alternative upside revenue opportunities they can target.

Met Office (£000s)	Company forecasts				
	2012/13	2013/14	2014/15	2015/16	2016/17
Existing 5K site data					
Revenue loss	0	0	0	0	0
Setup cost	15				
Total impact	15	0	0	0	0
Additional Area observations as imagery					
Revenue loss	5	5	5	5	5
Setup cost	50				
Total impact	55	5	5	5	5

- **A further business case will be developed to support the release of additional data representing services provided to the public as part of the Public Weather Service. It is likely that this will cover impacts of releasing the National Severe Weather Warning Service and Historic Observations as data.**

2.3.3 Land Registry

1. Transaction data

Assumptions

- We widen current information to include preliminary services in the application types (searches of whole/part/, SIMs and official copies)
- We convert the current Excel spreadsheet to a more readable and re useable format (CSV or XML).

Financial cost to Land Registry

- One off implementation/transition: £12,000 (IS developer staff costs)
- Ongoing annual maintenance/support: £12,000 (IS and FOI clerk support)

Issues

- There is a need to ensure LR customers are aware of what data will be published about transactions.
- This may require changes to sign up terms for credit account holders.
- LR will need to consider whether to write to our credit account customers to inform them of the intention to publish and also sign post this on our website.

2. Price paid information

Assumptions

- That the data would be available in current CSV format initially
- The supply of PPI data to be considered for conversion to XML (further £140,000 cost) if assessed necessary from customer feedback
- We publish on the 20th of every month to coincide with House Price Index (HPI)

Financial cost to Land Registry

One off implementation/transition:	£12,000
One off potential refunds to existing customers	£300,000
Loss of annual revenue:	£600,000
Additional Annual Support costs:	£60,000

Issues

- Careful customer handling required with existing customers and impact on contracts.
 - Land Registry needs to have a dialogue with IC and TNA in relation to the relaxing of existing contract terms (ie removal of barrier to direct marketing)
 - Uncleansed data still holds approximately 10% errors, this will need to be caveated on release
 - Careful people handling is required particularly with CCD staff (BD Team and PP Team)
- Information provided from LR looks at the financial impact primarily from the current year (2011/12). Therefore we have needed to extrapolate this out one year. In addition, Refund and Implementation costs are in reality likely to be incurred in 2011/12 but for the purposes of our analysis we have included it in 2012/13.

Land Registry (£)	Extrapolations	
	2012/13	2013/14
Price Paid Information	600,000	594,000
Standard Reports	97,951	97,951
Refund costs (incurred 2011/12)	300,000	
Implementation costs	14,000	
Ongoing costs	72,000	72,000
Total impact	1,083,951	763,951

2.3.4 Companies House

- A free bulk product for basic registry info would have some impact on:
 - CH's directory snapshot product (annual revenue c£25k)
 - Daily update product (annual revenue c£120k)
 - DVD ROM product and data file product (annual revenue c£50k).
- The combined income impact of these is likely to be in the region of £50pa.
- CH do not anticipate the costs of producing the new product to be high, estimated to be £25k

	Co. forecast
Companies House (£)	2012/13
Revenue loss (directory snapshot product, DVD ROM product and data file product)	50,000
Implementation cost	25,000
Total impact	75,000

2.3.5 Summary

Summary (£m)	2012/13	2013/14	2014/15	2015/16	2016/17
Data Package impact:					
Ordnance Survey					
Met Office	0.1	0.0	0.0	0.0	0.0
Land Registry	1.1	0.8	0.8	0.8	0.7
Company House	0.1	0.0	0.0	0.0	0.0
Total impact					

- Which when broken down by type of cost is as follows:

Summary (£m)	2012/13	2013/14	2014/15	2015/16	2016/17
Data Package impact:					
Revenue impact					
Implementation cost					
Ongoing costs					
Total impact					

2.4 Financial impacts: extrapolations

- To assess the potential financial impact over 10 years we have extrapolated the financial information provided taking into account guidance on the longer term direction of particularly revenues.

2.4.1 Ordnance Survey

- We have assumed flat (zero) growth over the forecast period of 2017-2022

Ordnance Survey (£)	Company forecasts					Extrapolations				
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Ordnance Survey has committed to working with Local Authorities to enable the release of "Public Rights of Way" data as Open Data. (p.a., if data not worked on)										

2.4.2 Met Office

- We have assumed zero revenue loss from existing 5K site data

Met Office (£000s)	Company forecasts					Extrapolations				
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
<u>Existing 5K site data</u>										
Revenue loss	0	0	0	0	0	0	0	0	0	0
Setup cost	15									
Total Impact	15	0	0	0	0	0	0	0	0	0
<u>Additional Area observations as Imagery</u>										
Revenue loss	5	5	5	5	5	5	5	5	5	5
Setup cost	50									
Total Impact	55	5	5	5	5	5	5	5	5	5

2.4.3 Land Registry

- Price Paid information revenue is grown at -2%p.a. from 2013/14 onwards
- Standard Reports revenue is kept flat throughout

Land Registry (£)	Extrapolations									
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Price Paid Information	600,000	594,000	588,060	582,179	576,358	570,594	564,888	559,239	553,647	548,110
Standard Reports	97,951	97,951	97,951	97,951	97,951	97,951	97,951	97,951	97,951	97,951
Refund costs (incurred 2011/12)	300,000									
Implementation costs	14,000									
Ongoing costs	72,000	72,000	72,000	72,000	72,000	72,000	72,000	72,000	72,000	72,000
Total Impact	1,083,951	763,951	758,011	752,130	746,309	740,545	734,839	729,190	723,598	718,061

2.4.4 Companies House

- Revenue loss is grown at -2%p.a. from 2013/14

Companies House (£)	Co. forecast	Extrapolations								
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Revenue loss (directory snapshot product, DVD ROM product and data file product)	50,000	49,000	48,020	47,060	46,118	45,196	44,292	43,406	42,538	41,687
Implementation cost	25,000									
Total Impact	75,000	49,000	48,020	47,060	46,118	45,196	44,292	43,406	42,538	41,687

2.4.5 Summary

Summary (£m)	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Data Package Impact:										
Ordnance Survey										
Met Office	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land Registry	1.1	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Company House	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Impact										

2.5 NPV analysis

- We have calculated the NPV of the financial impacts to the Assets on the following basis:
 - i. NPV of forecast 20 year financials impacts – derived by assuming a steady state in 2021/22 and applying a zero growth rate for the next 10 years
 - ii. no assumed terminal value after 20 years
 - iii. all figures provided by the Assets are assumed to be nominal and are therefore adjusted for inflation using a GDP deflator of 2.5% in 2012/13 and 2.7% thereafter
 - iv. a discount rate of 3.5% (representing the recommended Green Book discount rate) is applied to the inflation adjusted forecasts
 - v. sensitivities assuming a range of growth assumptions from 2022 onwards

2.5.1 Ordnance Survey

Ordnance Survey (£m)	20-yr NPV
Discount rate	3.5%

Sensitivity table: 20 year NPV (£m)

Growth rate (2022-2032)				
(5.0%)	(2.5%)	0.0%	2.5%	5.0%

2.5.2 Met Office

Met Office (£m)	20-yr NPV
Discount rate	3.5%
Total NPV	0.1

Sensitivity table: 20 year NPV (£m)

Growth rate (2022-2032)				
(5.0%)	(2.5%)	0.0%	2.5%	5.0%
0.1	0.1	0.1	0.1	0.1

2.5.3

Land Registry

Land Registry (£m)	20-yr NPV
Discount rate	3.5%
Total NPV	8.5

Sensitivity table: 20 year NPV (£m)

Growth rate (2022-2032)				
(5.0%)	(2.5%)	0.0%	2.5%	5.0%
7.9	8.2	8.5	8.9	9.4

2.5.4

Companies House

Companies House (£m)	20-yr NPV
Discount rate	3.5%
Total NPV	0.5

Sensitivity table: 20 year NPV (£m)

Growth rate (2022-2032)				
(5.0%)	(2.5%)	0.0%	2.5%	5.0%
0.5	0.5	0.5	0.5	0.6

2.5.5

Summary

Summary (£m)	20-yr NPV
Discount rate	3.5%
Ordnance Survey	█
Met Office	0.1
Land Registry	8.5
Companies House	0.5
Total aggregate NPV	█

Sensitivity table: 20 year NPV (£m)

Growth rate (2022-2032)				
(5.0%)	(2.5%)	0.0%	2.5%	5.0%
█				

3 Benefits analysis

3.1 Introduction

3.1.1 This section will present an analysis of the expected benefits from releasing the data package as Open Data. The derived benefits are separated into three separate costings:

1. Businesses and users whose costs have reduced for the same purchasing pattern – measured by their increase in profits
2. Businesses and users who are now developing new products they didn't do before – measured by increase in profits
3. Wider social welfare benefit

3.1.2 The first two benefits are sourced directly from the Trading funds themselves and together represent our best estimate of the overall economic benefit from releasing the one day package. The third benefit is a measure of Welfare taken from "Models of Public Sector Information Provision via Trading Funds, by Newbury, Bentley and Pollock 2008⁷". As this is a more assumption driven approach whilst we have quantified the benefit we have not included this benefit to the total headline economic benefit (further detail provided below).

3.2 Benefit costing 1: Benefit Transfer from taxpayer to existing users

3.2.1 A significant proportion of the benefit of releasing data for free at the point of use will be captured by the existing users of the data, who currently pay the Trading Funds to licence the data. This will be a simple transfer of benefit from the taxpayer - through the Trading Funds - who would otherwise have generated revenues – to their customers who would otherwise have had to pay for the data but now will be able to use the data without charge. The level of benefit here is therefore equal to the revenue loss to the Trading Funds from releasing the data package. (See cost section for further details).

3.2.2 The tables below set out the benefit from each Trading Fund. It is equivalent to the revenue lost presented in the cost section. Note that Met Office 5K data is not included in the list of benefits below. This is presented separately in benefit section 2 as it does not represent a direct revenue loss for the Met Office and therefore is not a transfer of benefits.

⁷ Available at <http://www.berr.gov.uk/files/file45136.pdf>

Table: Individual trading fund annual estimate of benefit from one day package (nominal)

	Company forecasts					Extrapolations				
Ordnance Survey (£)	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
"Public Rights of Way" data										
	Company forecasts					Extrapolations				
Met Office (£)	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Additional Area observations as imagery	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000
	Extrapolations									
Land Registry (£)	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Price Paid Information	600,000	594,000	588,060	582,179	576,358	570,594	564,888	559,239	553,647	548,110
Standard Reports	97,951	97,951	97,951	97,951	97,951	97,951	97,951	97,951	97,951	97,951
Aggregate LM impact	697,951	691,951	686,011	680,130	674,309	668,545	662,839	657,190	651,598	646,061
	Co. forecast	Extrapolations								
Companies House (£)	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Directory snapshot product, DVD ROM product and data file product	50,000	49,000	48,020	47,060	46,118	45,196	44,292	43,406	42,538	41,687
Summary (£m)	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
Data Package impact:										
Ordnance Survey										
Met Office	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Land Registry	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6
Company House	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total impact										

3.2.3 For the central costing, it is assumed that after the initial 10 year period (from 2022/23 onward), there is a zero percent growth rate. Based on this assumption, the table below illustrate for each Trading Fund, these stated benefits over a 20 year period. This shows in nominal terms a total benefit of [redacted] over a 20 year period ([redacted] discounted).

Table: 20 year benefit from the one day package released by Trading Funds

Total over 20 year period		
£m	Nominal	NPV
[redacted]	[redacted]	[redacted]
LR	13.2	7.4
MO	0.1	0.1
CH	0.9	0.5
[redacted]	[redacted]	[redacted]

*For the Net present value, the same assumptions as set out in the cost NPV analysis have been used: NPV over 20 years, base date is April 2012 (2011/12), zero growth after 2021/22, deflated by GDP deflator 2.5% (2012/13) and 2.7% thereafter, discount rate of 3.5%.

3.3 Benefit costing 2: Additional Met Office Benefits from 5K site data

3.3.1 The benefits transfer above does not include the potential revenue loss from releasing Met Office 5K site data. This is because the potential revenues are not currently built into Met Office's business plan and therefore do not represent a real loss of revenue. However, Met Office have made some estimates of potential revenue streams that could potentially be generated in a 'stretch case' scenario on their business plan. We therefore assume that this incremental revenue generation could now be captured by other businesses in the market.

Table: Met Office estimated benefit to market from 5K site data

Met Office (£m)	Company forecasts					Extrapolations				
	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22
5K site data	1.0	2.0	3.5	4.5	5.0	5.3	5.4	5.4	5.4	5.4

3.3.2 The benefit has been provided by Met Office until 2016/17. After this date we assume a fall in benefit growth in 2017/18 (5% increase), and 2019/20 (3% increase), before assuming steady state thereafter. Based on these assumptions, the table below illustrates for each Trading Fund the stated benefits over a 20 year period. This shows in nominal terms a total benefit of £97.0m over a 20 year period (or £50.7m discounted).

Table: 20 year benefit from Met Office 5K site data

Met Office 5K data (£m)	Total over 20 year period
Nominal	97.0
NPV	50.7

3.4 Total economic benefit

3.4.1 In order to understand the total monetised benefit, we can sum the benefit estimated in the transfer and the benefit estimated from the Met Office 5K release. This shows that combined, the total economic benefit is [REDACTED] over the 20 year period, ([REDACTED] discounted).

Table: Total economic benefit over the 20 year period, nominal

£m	Total over 20 year period (nominal)		
	Benefit data package	Additional benefit from Met Office 5K site data	Total (summary)
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
LR	13.2		13.2
MO	0.1	97.0	97.1
CH	0.9		0.9
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Table: Total economic benefit over the 20 year period, NPV

£m	Total over 20 year period (NPV)		
	Benefit data package	Additional benefit from Met Office 5K site data	Total (summary)
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
LR	7.4		7.4
MO	0.1	50.7	50.8
CH	0.5		0.5
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

3.5 Sensitivity Testing: Growth from 2022/23 onwards

3.5.1 We have performed sensitivity testing by varying the growth rate from 2022/23 onwards.

Table: Sensitivity on growth between -5% and 5%, nominal

£m	Total over 20 year period				
	Growth rate (2022-2032)				
	-5%	-2.50%	0%	2.50%	5%
LR	11.6	12.4	13.2	14.1	15.2
MO	0.1	0.1	0.1	0.1	0.1
CH	0.8	0.8	0.9	0.9	1.0

Table: Sensitivity on growth between -5% and 5%, NPV

£m	Total over 20 year period				
	Growth rate (2022-2032) NPV				
	-5%	-2.50%	0%	2.50%	5%
LR	6.9	7.1	7.4	7.8	8.2
MO	0.1	0.1	0.1	0.1	0.1
CH	0.5	0.5	0.5	0.5	0.5

3.6 Benefit costing 3: wider social welfare benefit

3.6.1 This section draws on the model developed in the Cambridge study Models of Public Sector Information Provision via Trading Funds. **This is considered as an additional, but separate, benefit and so has not been (and should not be) included in the ‘total economic benefit’ as described in the headline benefit result in the previous section.**

Figure 1: Pricing and Welfare Analysis

The study, *Models of Public Sector Information Provision via Trading Funds*, by Newbury, Bently and Pollock 20082, commissioned by the Department for Business Innovation and Skills (BIS) and HM Treasury (also known as the Cambridge Study), analysed the impact of different pricing models for the provision of public sector information at the six largest Trading Funds by revenue from information provision, which included the Ordnance Survey, Met Office, Land Registry and Companies House.

The Cambridge analysis attempts to capture the dynamic effects of making data more freely available by multiplying the demand function by a certain factor to capture positive spillover effects. Specifically, lower prices for data today, by increasing access and usage, might stimulate the rate of innovation by the producers of complementary goods and assist in the development of entirely new products and services. Therefore, using the basic demand curve may lead to underestimate the gains from lower prices.

There is very little empirical evidence available, although available studies indicate that for example geographic information is widely used, particularly as an input into intermediate products and services, which in turn suggests that the multiplier could be

quite significant. The authors assume generally for the four Trading Funds (MO, CH, OS and LR), a multiplier of 3. The study assumes the price elasticity of demand⁸ for the respective Trading funds is between 1 and 2 which is inferred from the existing literature. It should be stressed that the welfare results are very sensitive to these certain assumptions.

3.6.2 The release of the constraints and reduction in cost of data should allow greater levels of innovation and the development of new and enhanced commercial applications, from which both existing and new market participants are expected to benefit. Our internal analysis applies the information received from the Trading Funds (on changes to revenue) to the theoretical approach as set out in the Cambridge study in order to derive the wider societal benefits from the data package.

3.6.3 For the central case, we have assumed a multiplier of 3 throughout and a conservative price elasticity of demand of 1. The benefit for the Met Office 5K data has not been included in this analysis to avoid any double counting of innovation multipliers.

3.6.4 Using these central assumptions gives a total estimate of ██████ in increased welfare (██████ NPV). Recognising the benefit is sensitive to the assumptions of elasticity and multipliers, the table below sets out a range.

Table: Central estimate of welfare benefit

£m	Total over 20 year period	
	Nominal	NPV
██████	██████	██████
LR	13.7	7.8
MO	0.1	0.1
CH	0.9	0.5
██████	██████	██████

Table: Welfare benefit scenario range, NPV

£m	Total over 20 year period, NPV		
	low scenario	central scenario	high scenario
██████	██████	██████	██████
LR	4.7	7.8	21.4
MO	0.0	0.1	0.2
CH	0.3	0.5	1.4
██████	██████	██████	██████

Low scenario: multiplier = 2, elasticity = 1

Central scenario: multiplier = 3, elasticity = 1

High scenario: multiplier = 3, elasticity = 2.5

⁸ The price elasticity of demand is a measure of the sensitivity of quantity demanded to changes in price. It is measured as elasticity, that is it measures the relationship as the ratio of percentage changes between quantity demanded of a good and changes in its price.

Sensitivity Testing:

Changing the elasticity of demand (while assuming the central multiplier effect of 3) changes the range from [REDACTED], over the 20 year period.

Table: Varying elasticity, keeping the multiplier fixed a 3, NPV elasticity, keeping

£m	Varying elasticity, keeping multiplier fixed at 3 (NPV)					
	0	0.5	1	1.5	2	2.5
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
LR	(1.4)	3.2	7.8	12.3	16.9	21.4
MO	(0.0)	0.0	0.1	0.1	0.1	0.2
CH	(0.1)	0.2	0.5	0.8	1.1	1.4
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Changing the multiplier (assuming the central elasticity fixed at 1) changes the range from [REDACTED] over the 20 year period.

Table: Varying multiplier effect keeping elasticity fixed at 1 (NPV)

£m	Varying multiplier effect keeping elasticity fixed at 1					
	1	2	3	4	5	10
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
LR	1.7	4.7	7.8	10.8	13.8	29.0
MO	0.0	0.0	0.1	0.1	0.1	0.2
CH	0.1	0.3	0.5	0.7	0.9	1.9
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Changing the rate of the multiplier over time affects the Welfare benefit. For the options tested in the table below the benefit ranges from: [REDACTED] (NPV, with no multiplier) to [REDACTED]

The table below represents different multiplier profiles over time. They are intended to be scenarios to help understand the sensitivity of the multiplier assumption, but are not modelled on any specific expectation.

Table:

	Multiplier Profile, assuming constant elasticity of 1				
	No multiplier	Central assumption	Slow build and fall	Faster build and fall	Sustained innovation
2013	1	3	1	1	1
2014	1	3	2	2	2
2015	1	3	2	3	3
2016	1	3	3	4	4
2017	1	3	3	5	5
2018	1	3	4	8	8
2019	1	3	4	10	10
2020	1	3	5	10	10
2021	1	3	5	10	10
2022	1	3	4	5	5
2023	1	3	3	3	5
2024	1	3	2	3	5
2025	1	3	1	3	5
2026	1	3	1	3	5
2027	1	3	1	3	5
2028	1	3	1	3	5
2029	1	3	1	3	5
2030	1	3	1	3	5
2031	1	3	1	3	5
2032	1	3	1	3	5

*Note for the years, 2013 represents 2012/13.

3.7 Beneficiaries of data package

Summary

3.7.1 Small and medium sized businesses in particular can find accessing and making data usable time consuming and a distraction from exploitation and innovation. In order to develop stable business models and to be able to attract investment business needs an environment of stability and certainty in terms of the accessibility of public sector data. Entrepreneurs need to be able to persuade their backers that there will be a viable business opportunity and that the raw material they are working with will continue to be available. In these current times businesses need reassurance that the Government is committed to this agenda and is ensuring this new way of working is being engrained in policy development and delivery over the long-term.

3.7.2 In addition to serving the aims of attracting private investment and making licensing and charging for data clearer and more consistent, this move will enable more SMEs to establish added value services and products based on the core reference data to some of the key public information organisations in the UK. They will also do so without a labour and resource intensive licensing process, which is currently considered prohibitive due to the cost of information and the access process.

Impact on data users

3.7.3 The biggest winners of the data package are those organisations who currently use the data that will now be free at the point of use. There are also other specific examples of how the data package may benefit users. To exemplify this, the following section is based on information collated from discussions with the Trading Funds as well as through direct interaction with stakeholders (primarily through the Consultation on Data Policy for a PDC):

- Met Office –
 - Benefits are most likely to come over time from innovation and growth of the market into areas that may not even be considered yet. This is likely to consist of mashing of data with other data sets, making more functional or easier to use or apps.
 - Met Office's own predictions assume that mashing of data (crime and weather links; snow conditions and slope availability openness; transport (rail and road with weather for how the journey will be; picking up the kids from school; what was the weather like on "the day I was born" "my granddad died" etc) would be examples of how the data released will be used
 - Another prediction is around making weather applications and the like more user friendly.
- Ordnance Survey –
 - The end-users to benefit from this data are likely to be general leisure users e.g. for walking. They would be unlikely to use the raw data and would need some sort of application provider to develop it into something useful. It is therefore likely to be a market among developers literate in geographic information, for example members of the OpenStreetMap, to use the data to build routes and support other offerings to the wider leisure community.
 - Existing (or new) commercial businesses, including OS partners, may wish to add additional routing capability to their products using the data. It is likely that these users would wish to have complete national coverage so would need to work with Local Authorities to build that functionality. These types of products might include dynamic routing for use in outdoor leisure applications (e.g. for mobile phones) which again, would be supplied to end users in the wider leisure market.
 - Additionally some parts of the land and property and utility markets may find the data useful, as rights of way and access can be an issue for these businesses. It is likely that these sectors may already have access to this data from other sources but a free, authoritative data source from local authorities may be of some incremental benefit.
- Land Registry –
 - **Address level house price paid data**
 - Existing customers for this data are, in the main, companies that publish the data on their own websites. Land Registry has 30 existing subscribers who are website-based businesses, and 7 others which they class as consultant/research users. In a typical month they also receive ad hoc requests for specific areas and time periods of data from a small group of customers, most of which are Local Authorities - on average 5 requests a month. They also receive ad hoc requests from Estate Agents and Solicitors, usually 1-2 a month from each sector.
 - **Standard reports (average house prices)**
 - The customer base for this product is much wider. In a typical month it will include: 31 Local Authorities, 27 Estate Agents, 14 Consultants, 10 Data Analyst/Research, 5 Lenders, 3 media bodies, 2 Surveyors, 2 Utility Companies, 2 Retail, 2 citizens and 1 Website business.
 - Releasing this data for free may create interest in the market for other Land Registry added-value products and services
 - There is unlikely to be significant additional benefit to individual citizens of this data being made available for free from Land Registry as it is already made available free at the point of use on a number of commercial websites (funded through advertising).
 - **Transaction data**

- Releasing this data proactively will provide greater consumer choice - as it enables the individual to analyse lender products, by provider
- Search information may also be a leading indicator of housing market movements. Searches are a prerequisite undertaken prior to all financial transactions involving registered properties, including mortgaging and transferring land. So the volumes at any given time give a lead indication of this market activity. Low volumes will show a stagnant market, high volumes that the market is becoming more active. Combined with price paid data (see above), the data will be a valuable trend statistic available for free to the market.
- Companies House –
 - There have been some important changes in the business information market over the last 6 - 8 months. New businesses have been set up (Level Business, Duedil) and they are now making a wider range of information available for free. This includes copies of accounts and directors information that Companies House can only make available for a fee. Level Business buy bulk data from CH and make it available for free and are looking to build other services on top of this free offering. While this has, to date, not had a significant impact on CH information services this represents a significant change in the industry and moves to open up data further could encourage other new entrants into the market place.
 - Additionally, since its launch in October 2011, the new unique reference indicator service (URI) has seen some significant volumes within a month of going live with the last two weeks of October seeing 1.3 million and 1.6 million calls. The proposed bulk data product would provide a snapshot of the whole register covering similar information that the URI service provides for individual companies and so if available might have provided one product to meet this need. This provides an indication that there is demand for this type of information.

3.7.4 Examples of UK companies that could benefit from the package:

(These are samples from the responses to the PDC data policy consultation, and by no means an exhaustive list. Many of the sentiments are repeated in other submissions)

- **Demographic User Group UK** – in their response to the PDC data policy consultation they highlighted the benefit to their members of the New National Address Gazetteer being made available for free.
- **Decision Insight Information Group** – in their response to the PDC data policy consultation they highlighted the benefits for a wider mortgage related industry (legal, insurance, lending) of releasing more Land Registry data, indicating the usefulness of the data in the proposed package.
- **The Market Research Society (MRS) MRS Census and Geodemographics Group (CGG)** – in their response to the PDC data policy consultation they identified the National Address Gazetteer as an important dataset that would realise significant benefits for accurate Market Research and Marketing if available to all under the Opendata banner
- **Commercial Weather Services Association** – in their response to the PDC data policy consultation, they highlight the benefit of making Met Office information available as Open Data to get around challenging restrictions and conditions around pricing. This is described as an opportunity to create a level playing field in the market for products and services based on meteorological data and thereby stimulating real market growth in this sector.
- **Locus Association** – in their response to the PDC data policy consultation they highlighted how the whole nation would benefit from easier access to address information.
- Both the PCS and FDA divisions of Land Registry, believe there will be limited if any impact of making the Price Paid data available for free, as indicated in their consultation responses.

Other users affected by data package

3.7.5 In its consultation on PDC data policy, Government considered the likely impacts of the policy options on a range of users of PDC information: citizens, SMEs, developers, third sector (e.g. charities, community groups, and social enterprises), public sector users, corporate users and re-users; existing competitors and partners; Government as a whole; and PDC and its constituent parts. Similarly, for the release of the data package, an indication of how these broad segments are likely to benefit has been given.

3.7.6 For ease of presentation, citizens have been excluded and developers are included in SMEs. As this analysis is looking at the benefits mainly to the private sector, benefits to public bodies and Government as a whole have not been analysed.

SMEs/Third Sector Organisations

3.7.7 These organisations can face greater barriers to accessing the information they require, and the datasets made available now will greatly improve their ability to develop products and services for the market. A small UK SME, like OpenCorporates or Level Business, would benefit from the release of Companies House data free at the point of use.

Corporate users

3.7.8 Where larger business rely on information included in the package that will now be available for free this would represent a saving. One response to the PDC data policy consultation suggested: "The impact of publishing this data will be positive for Esri UK and its many public sector customers. Public data will grow Esri UK's business by creating the demand for tools and services that help organisations make sense of open data."

3.8 Additional information and case studies

3.8.1 Geographical and weather data have frequently been listed as the most requested datasets by commercial and non-commercial data users. This is reflected in responses to both the Making Open Data Real consultation and the consultation on Data Policy for a Public Data Corporation. Where entrepreneurs and innovators have access to such data free at the point of use, the possibilities for growth and new information markets are potentially large. Indeed, according to analysis by the Economist (8th October 2011, Special Report) in the article 'Apps on Tap', weather apps were the second most popular type. Of Android/Apple apps (survey Q2 2011), the percentage of users downloading apps in each category suggested weather apps were at 60% of users, and maps apps, coming in at 4th, were at 51% of users.

3.8.2 These markets have the potential to expand over the coming years, and it is possible that releasing more data openly may stimulate this growth. It was argued by the Commercial Weather Services Association in their response to the PDC data policy consultation that the "position of bodies such as the Met Office currently distort this market and have led to a lack of investment in commercial weather services in the UK, particularly when compared with the USA. Recent figures suggest that the market in value-added meteorological products in the USA is \$1.4 billion per annum (from a GDP of \$14,582,400 million), while the European market is worth \$786 million (from a GDP of \$16,282,230 million). In real terms, after allowing for growth in GDP, the US market is estimated to have grown at an average rate of around 17% per annum over the past six or seven years while the European market has been growing at closer to 1.2% per annum in the same period⁹."

3.8.3 In 2010 the Association for Geographic Information (AGI) estimated that the level of investment in the UK geographic information market, both in the public and private sector, is between £650 million and £900 million per annum.[2] The AGI anticipates that the market will grow to over £1 billion by 2015. In particular, it expects growth to come from: homeland security, climate change, disaster management, energy and food security.

3.8.4 A specific example is 'smart logistics' stemming from environmental concerns, the high

⁹ Sources: Pettifer R. E. W.; Towards a Stronger European Market in Applied Meteorology. Meteorol. Appl. 2008 Vol 15 p305-312/ I.M.F.; World Economic Outlook Database for 2010

cost of fuel, and an increase in home delivery of retail and groceries. Traditionally geospatial applications have been used to document or analyse the past or plan for the future. It is likely there will be significant growth in applications focused on real time information; already over 15% of applications on Apple's AppStore utilise location in some way.[3]

3.8.5 Drawing on a recent Australian study¹⁰, considering the reported impacts of spatial data in Australia, a 2010 Price Waterhouse Coopers study computed the welfare impacts of the free provision of GA topographical data relative to cost recovery and noted: an agency loss of \$13.3 million per annum in revenue foregone; a gain for government users of \$10 million per annum; a gain for private consumers of \$8 million per annum; and an overall increase in net welfare of \$4.7 million per annum.

3.8.6 Extrapolating this to annual Australian government expenditure on fundamental spatial data of around \$70 million would suggest net welfare benefits of around \$25 million per annum. Looking at spatial information in Australia, ACILTasman (2008) estimated that industry revenue in 2006-07 could have been of the order of \$1.37 billion and industry gross value added around \$682 million. Using a General Equilibrium (GE) modelling approach, they concluded that the economic footprint of the spatial information industry was larger.

Case Studies

Open Street Map Foundation <http://www.openstreetmap.org/>

OpenStreetMap is an initiative to create and provide free geographic data, such as street maps, to anyone. The OpenStreetMap Foundation is an international not-for-profit organization supporting, but not controlling, the OpenStreetMap Project. It is dedicated to encouraging the growth, development and distribution of free geospatial data and to providing geospatial data for anyone to use and share.

British Columbia Online - <https://www.bconline.gov.bc.ca/>

BC Online takes datasets from a range of different public sector bodies, including the local Land Registry, the Wills Registry, the equivalent of Companies House, the Court Services branch and others. The Government retains ownership of the data, as well as responsibility for its collection and maintenance.

In ten years of operation, BC Online has proved hugely successful and has vastly improved access and re-use of public sector data in British Columbia. Over the ten year period, BC Online has experienced 175% growth in transaction volumes, 192% growth in revenue collected, no price increases to users, and costs of operation have fallen from 20% to 15%.

US National Weather Service -

Data collected by the US National Weather Service supports a huge industry. According to the American Meteorological Society, the total size of the private sector weather market is greater than \$1.5 billion per year[8] while research has estimated the direct economic value of access to US government meteorological data is \$500 million per year[9]. A literature review by Arzberger et al (2004) also identified the role of this public data in supporting a rapidly growing weather risk management industry underwriting financial risk management instruments, valued at approximately \$8 billion. In contrast, the same study concluded: "the private-sector value adding industry for meteorological information in the European Union is very small, largely attributable to the highly restrictive data policies of most national governmental meteorological services." [10]

¹⁰ http://ands.org.au/resource/houghton-cost-benefit-study.pdf?bcsi_scan_18C5E7506144CFE2=0&bcsi_scan_filename=houghton-cost-benefit-study.pdf

Danish Address Data - [The value of Danish address data: Social benefits from the 2002 agreement on procuring address data etc. free of charge](#)

In 2002, the official Danish address data was made available free of charge. (p. 1) "The conclusion of the study is that the direct financial benefits from the agreement for society in the period 2005-2009 amount to around EUR 62 million (~DKK 471 million). Until 2009 the total costs of the agreement has been around EUR 2 million." (p. 2) "In 2010 it is estimated that social benefits from the agreement will be about EUR 14 million, while costs will total about EUR 0.2 million. Around 30% of the benefits will be in the public sector and around 70% will be in the private sector."

The Value of Geospatial Information to Local Public Service Delivery in England and Wales
- <http://www.lga.gov.uk/lga/aio/13725637>

This report examines the economic impact of the use of geospatial information in local public service delivery in England and Wales. Based on case studies in key application areas and applying a conservative valuation methodology, this study estimates that GDP was approximately £320m higher in 2008-9 in England and Wales than would have been the case without adoption of geospatial information by local public services providers.

Under a business as usual scenario, this would be expected to rise to an estimated £560m in 2014-5, but with more rapid introduction of government policies to free up data access and copyright and with improved awareness of the value of geospatial information at senior management level, this could be improved to an estimated £600m by 2014-5, with significant gains across various areas, but particularly in Primary Care Trusts (PCTs).

