

Borders Broadband
Herefordshire and Gloucestershire

The Economic Impact of NGA Broadband in Herefordshire and Gloucestershire

(BB50)

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Document Purpose

The document has been developed to generate an understanding of the likely impact of the cumulative public sector investment in the Borders Broadband Project on the economy of Herefordshire and Gloucestershire. It considers the outcome and importance of both the subsidy of the physical infrastructure in the eligible investment area but also the impact of demand stimulation activities on the wider economy.

Version History

Version	Date Issued	Brief Summary of Change	Author
1	8/2/12	1 st Draft	M Smith
2	10/2/12	Comments from RS and Clem Attwood incorporated	M Smith
2.1	13/2/12	Formatting Changes to Graphs	M Smith
3	29/2/12	Inclusion of Optimisation Diagram	M Smith

Document Chronology

Economic Impact Report BB50

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9. Combined Impact

1. Introduction

- a) The Borders Broadband Project is aiming to bring Next Generation Access (NGA) Broadband to as close to 100% as possible of business and residential premises in Herefordshire and Gloucestershire. For the purposes of this project, NGA is defined as broadband speeds of 30Mbps downstream and 5Mbps up.
- b) With much of this access being driven by private sector investment in the more populous areas of both counties, the Project's focus is to ensure that NGA services are available in areas which won't achieve access to such services through the commercial deployment alone.
- c) The Project will procure a private sector supplier to deliver wholesale broadband infrastructure that enables access to such services in the most isolated parts of both counties.
- d) Gap funding of up to c. £30m will be offered to enable the selected private partner to achieve access to high speed broadband. This funding has been made available through a partnership of BDUK (£14.5M), Herefordshire Council (£6M) and Gloucestershire County Council (£7.5M).
- e) The government premise for the investment through BDUK is primarily that high speed broadband is a key driver of economic growth. The Local Authorities motivations for their own investment are more evenly balanced between improving access to services and reducing isolation for the most marginalised communities, achieving efficiencies in the delivery of services to isolated communities, generating economic benefit through indigenous business growth and stimulating inward investment.
- f) Understanding the potential economic impact of the combined public sector investment within the area is therefore of critical importance to the Borders Broadband Project. This report considers the impact of the investment of capital and revenue resources in the project on the local economy.

2. Existing Economy

- a) Gross Value Added (GVA) is a measure of economic output and describes the total value of goods and services produced through economic activity in any particular period. This also equates to the total level of income generated by economic activity. It is the total size of the economic value created which can be distributed as income and is available to spend. GVA is a similar concept to Gross Domestic Product (GDP), the only difference being that GDP includes taxes and excludes subsidies on products.
- b) In 2009, the GVA of Herefordshire was valued at £2.74bn per annum while that of Gloucestershire was £11.5bn.
- c) The following two tables present details about the business population of Herefordshire and Gloucestershire as well as that of the areas which are eligible for capital investment by the public sector in the delivery of NGA services (see Map 1). Table 1 shows the business population broken down by the number of employees and Table 2 identifies the average turnover of businesses in the west midlands and south west of the UK by number of employees.

Table 1 Business Population by Number of Employees (Source: Annual Business Inquiry Workplace Analysis SIC 2007)

Area	1-10 employees	11-49 employees	50-199 employees	200+ employees	All units
Herefordshire	7,628	976	160	34	8,798
Gloucestershire	24,107	3,145	678	133	28,063
Eligible Area of Gloucestershire (LSOA)	12,140	1,250	232	45	13,667
Eligible Area of Herefordshire (LSOA)	5,098	516	75	14	5,703

Table 2 Average Turnover per Enterprise (£1000) (Source: Department of Business Innovation and Skills (IDBR))

	UK	West Midlands	South West
1-9 employees	417	352	312
10-49 employees	2,656	2,118	1,752
50-199 employees	12,488	11,438	8,748
200+ employees	203,869	158,966	138,067
All enterprises	2,418	1,911	1,330

3. Physical NGA Infrastructure Activities

- a) As stated in 1.b), there is a relatively expansive commercial rollout of NGA services in Herefordshire and Gloucestershire either currently in place or being planned over the next 3 years. Map 1 identifies the areas (marked as white) which will be affected by the commercial investment. These are considered to be outside of the scope of the Borders Broadband Project. These areas tend to be the more populous areas of Herefordshire and Gloucestershire and contain 36,861 business units.
- b) The businesses in the areas which will benefit from a commercially driven roll out tend to be larger in terms of their employment base and their turnover.
- c) To complement the commercial roll out, the Project will invest up to £30M in the provision of NGA wholesale Broadband Infrastructure to the remaining areas of both counties. The Eligible Investment Area is identified as green on Map 1. These areas tend to be the less populous areas of Herefordshire and Gloucestershire and contain 19,370 business units.
- d) The businesses in the areas which will require public subsidy to achieve NGA roll out tend to be smaller in terms of their employment base and their turnover.

4. Take Up & Optimisation

- a) Based on information provided by the industry through the procurement process, it is assumed that the provision of infrastructure and any complimentary marketing campaigns by ISPs' will result in a take up rate of c. 20% of the total market.
- b) This gives an indication of the base case for any demand stimulation activities that are delivered to compliment the project and achieve a higher take up rate.
- c) It should be acknowledged that take up alone will not necessarily lead to increased economic productivity and there remains a significant knowledge gap in ensuring businesses are aware of the specific applications and services which are enabled through High Speed Broadband. The optimisation of these applications such as software as a service, the virtual office, accessing skills and e-commerce / global market opportunities will be bespoke to each business and will be the means through which productivity, efficiency and access to new markets will be achieved. The successful exploitation of online applications and services requires more intensive support than the marketing of services.
- d) Figure 1 below gives an indication of the ways in which NGA enabled ICT can improve efficiency, increase competitiveness and bring greater resilience to businesses.



- e) The project is aiming for success, with an overall target of 50% take-up and optimisation. Evidence exists to show that this is achievable. The following rollouts have achieved high levels of take-up, underpinned by innovative local programmes of demand stimulation:
 - i. The Malarengri rollout in the Vadteras municipality of Sweden passed 30,000 premises and achieved a 60% take up of Fibre to the Premises (FTTP) after 5 years, before the emergence of widespread NGA applications
 - ii. The Lyse FTTP rollout in Norway achieves 60-80% take-up in areas of new deployments
 - iii. The Onsetnet rollout in Neunen, The Netherlands achieved an initial penetration of 97% in its first year (free service) and 80% remained connected when charged in the second year.

5. Demand Stimulation Activities

- a) Both Local Authorities are engaging in a range of demand stimulation activities with the business community which have been designed to underpin the project.
- b) These activities can be seen to split in to two distinct types in terms of business demand stimulation, awareness raising and business support.
 - i. Awareness raising activities including marketing and PR. Lead by the Project Team Stakeholder Managers and benefiting from the existing partnerships with local networks and business representative organisations (for instance the Gloucestershire LEP and the Herefordshire Business Board) these activities should increase the take up of NGA services. The awareness raising activities will rely heavily upon the generation of case studies (for instance through the development of a virtual company as a demonstrator) to exemplify the importance of higher level services.
 - ii. Business Support activities including diagnostics and one to many events. These activities will primarily be delivered by the UK IT Association (UKITA) in Herefordshire and the ERDF funded regional support programme for the South West in Gloucestershire (Peninsular). This intensive support should lead to an improved exploitation of the technology by those who have taken a service and ensure the largest economic impact is achieved.
 - 1. The cost to the public sector of providing the business support in Herefordshire through UKITA is £50,000. This will result in 100 businesses provided with intensive support and a further 100 with one to many support.
 - 2. The pro rata cost to the public sector of providing the business support in Gloucestershire through Peninsular is £654,000. This will result in 99 businesses provided with intensive support and a further 324 with one to many support.

Economic Impact Assessment

6. Capital / Revenue Separate Treatment

- a) In determining the economic impact of the Borders Broadband Project, the impact of the capital and revenue investments by the public sector as described above have been treated separately. The separation has been applied for 2 reasons;
- iii. The assumed deadweight of the private sector investment in capital infrastructure across much of the area; and
 - iv. The assumed deadweight of 20% take up of NGA services in all areas of Herefordshire and Gloucestershire regardless of whether the serving infrastructure has been funded commercially or via public subsidy.
- b) Following separate calculations, a combined impact will be estimated. It is acknowledged that without the capital the revenue won't happen.

7. Capital Investment

- a) Calculation Definitions

Term	Value	Rationale
Public Sector Investment	£28m	To be finalised
Output Type	Turnover	Turnover used as a proxy for improved business performance
Gross Outcome	3.7-4.1% uplift in turnover among 20% of the business population of the NGA Eligible Investment Area.	This will be graduated annually up to 6/7 years across all business typologies and calculated across the turnover types. ¹
Additionality Ratio	0.9	<p>Additionality is considered to be very low for the following reasons</p> <p>Deadweight = There is virtually no deadweight in the NGA Eligible Investment Area. The procurement process and state aid approval have proven to be subject to acute market failure and it is unlikely that this will change during the 10 year persistence</p> <p>Displacement = This investment is unlikely to lead to firms moving between areas in Gloucestershire and Herefordshire</p> <p>Leakage = Some very marginal leakage is possible over the borders but its impact will be negligible in terms of the small number of premises affected.</p> <p>Substitution = None</p> <p>Multipliers = Home workers will benefit as will the area's ability to stimulate inward investment. There will also be uplift in those which achieve increased but not NGA services but this will be negligible.</p>
Turnover/GVA Ratio	0.3	Turnover/GVA ratio (GVA as a % of annual turnover) in the West Midlands is 30%
Persistence	10 years	Infrastructure Lifetime = 25 years, Contract Term is 14 years. Persistence restricted to 10 years to balance the optimism bias in other areas.
Strategic Added Value	Leverage £22m	

¹ The West Midlands High Impact ICT Strategy, produced by Adroit Economics in 2007 outlined assumptions that the adoption of broadband enabled ICT in existing businesses raises turnover by an average of 3.7% over 6-7 years. It argues that this is a conservative estimate and is corroborated by a number of other studies.

b) Calculation

- i. The Economic Impact of the Capital infrastructure which will be subject to public subsidy has been calculated as follows;
- ii. $\text{Gross Outcome} \times \text{Additionality Ratio} = \text{Net Annual Impact}$
- iii. $\text{Net Annual Impact} \times \text{Turnover/GVA ratio} = \text{Annual GVA Uplift}$
- iv. $\text{Annual GVA Uplift} \times \text{Persistence} = \text{Total cumulative net economic impact}$
- v. The full calculation is identified in Appendix 2 and presents the impact of achieving 100% NGA coverage. It also presents a sensitivity analysis of the impact based on lower coverage proportions.

c) Economic Impact of the Capital Investment

- i. Figure 1 Below identifies the impact on GVA in each county over a 10 year period
- ii. Should 100% NGA coverage be achieved, the total Economic Impact over a 10 year period is estimated to be £436,125,362. This figure decreases steadily based on the level of coverage by 8% at 90% coverage and down by 43% at 50% coverage.

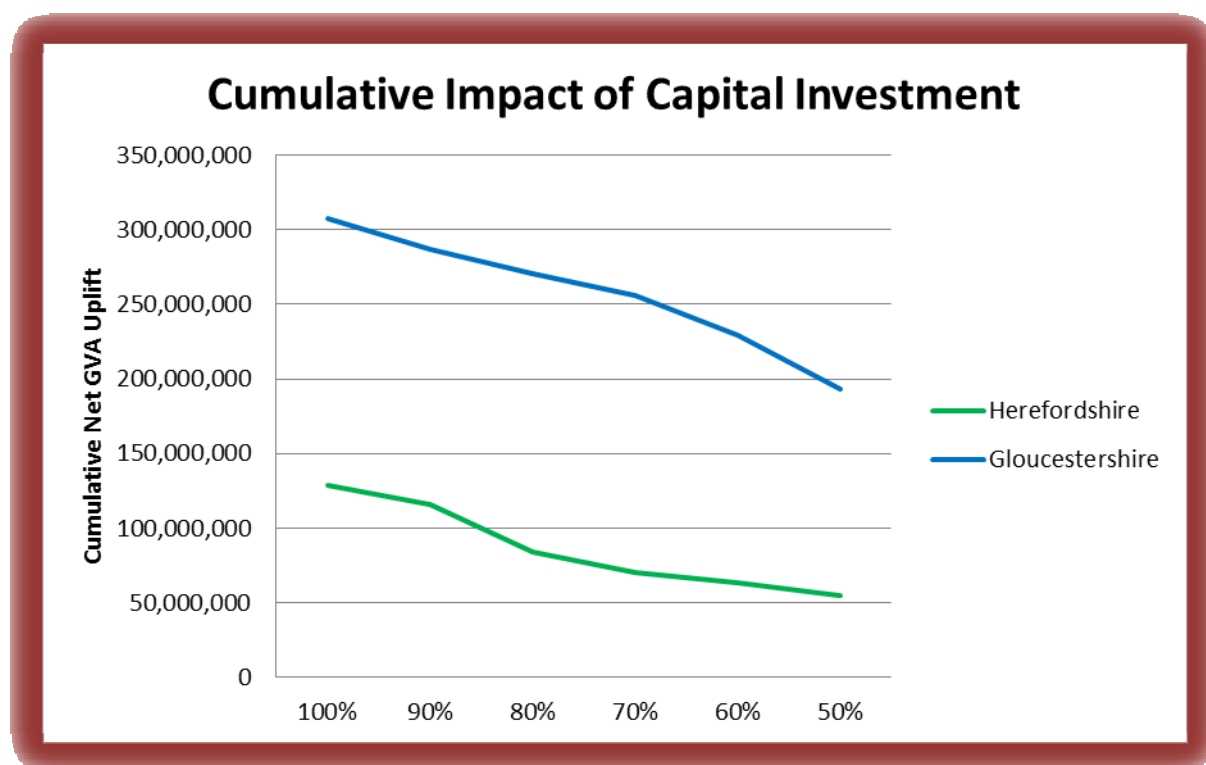


Figure 1

d) Return on Capital Investment

- i. The ROI is the Cumulative Impact / Initial Public Sector Subsidy. As the level of public subsidy available is relatively static, the ROI is almost exclusively dependent upon the coverage of NGA achieved.
 1. Based on a 100% NGA Deployment the ROI is estimated at 15.6:1
 2. Based on a 90% NGA Deployment the ROI is estimated at 14.4:1
 3. Based on a 80% NGA Deployment the ROI is estimated at 12.7:1
 4. Based on a 70% NGA Deployment the ROI is estimated at 11.7:1
 5. Based on a 60% NGA Deployment the ROI is estimated at 10.5:1
 6. Based on a 50% NGA Deployment the ROI is estimated at 8.8:1

8. Revenue Investment

a) Calculation Definitions

Term	Value	Rationale
Public Sector Investment	£150,000 Stakeholder Managers £50,000 UKITA & Subsidies £654,000 Peninsular	To be finalised
Output Type	Turnover	Turnover used as a proxy for improved business performance
Gross Outcome	2% uplift in turnover among proportions above 20% take up of the business population across both counties.	Turnover Uplift attributable where take up exceeds 20% due to successful demand stimulation. This will be graduated annually up to 6/7 years when turnover uplift reaches 3.7-4.1%. This figure has been curtailed due to the persistence of revenue activities.
Additionality Ratio	0.46	<p>Additionality is considered relatively low for the following reasons</p> <p>Deadweight = 20% has been removed from the calculation across the board to account for early adopters who take a service regardless of demand stimulation activities (though take up does not directly lead to exploitation).</p> <p>Displacement = Unlikely to affect firms in Gloucestershire and Herefordshire as access to NGA will be all pervasive</p> <p>Leakage = Some very marginal leakage over the borders but negligible</p> <p>Substitution = None</p> <p>Multipliers = Home workers will benefit but the affects will be hidden. There will also be uplift in those which achieve increased but not NGA services but this will be negligible.</p> <p>The former RDA benchmark of 0.46 has been applied.</p>
Turnover/GVA Ratio	0.3	Turnover/GVA ratio (GVA as a % of annual turnover) in the West Midlands is 30%
Persistence	3 years	Revenue investment impact capped at 3 years
Strategic Added Value	Leadership Strategic influence Engagement	Leadership Strategic influence – Herefordshire & Gloucestershire achieve a greater profile Engagement – Demand Stimulation activities will increase the project’s exposure to end users.

b) Calculation

- i. The Economic Impact of the Revenue investment by the public sector has been calculated as follows;
 1. Gross Outcome x Additionality Ratio = Net Annual Impact
 2. Net Annual Impact x Turnover/GVA ratio = Annual GVA Uplift
 3. Annual GVA Uplift x Persistence = Total cumulative net economic impact
- ii. The full calculation is identified in Appendix 3 and presents the impact of achieving graduated take up above the 20% deadweight benchmark. It therefore includes a sensitivity analysis based on take up.
- iii. It should be noted that achieving higher take up through awareness raising alone is unlikely to result in major turnover uplift as services will not necessarily be maximised.

c) Economic Impact of the Revenue Investment

- i. Figure 2 Below identifies the impact on GVA in each county over a 3 year period
- ii. Should a 10% increase above the deadweight figure of 20% Take Up and Optimisation, the total Economic Impact over a 3 year period is estimated to be £16,718,139. This figure increases significantly once take up exceeds 10% above the deadweight and 30% in total.

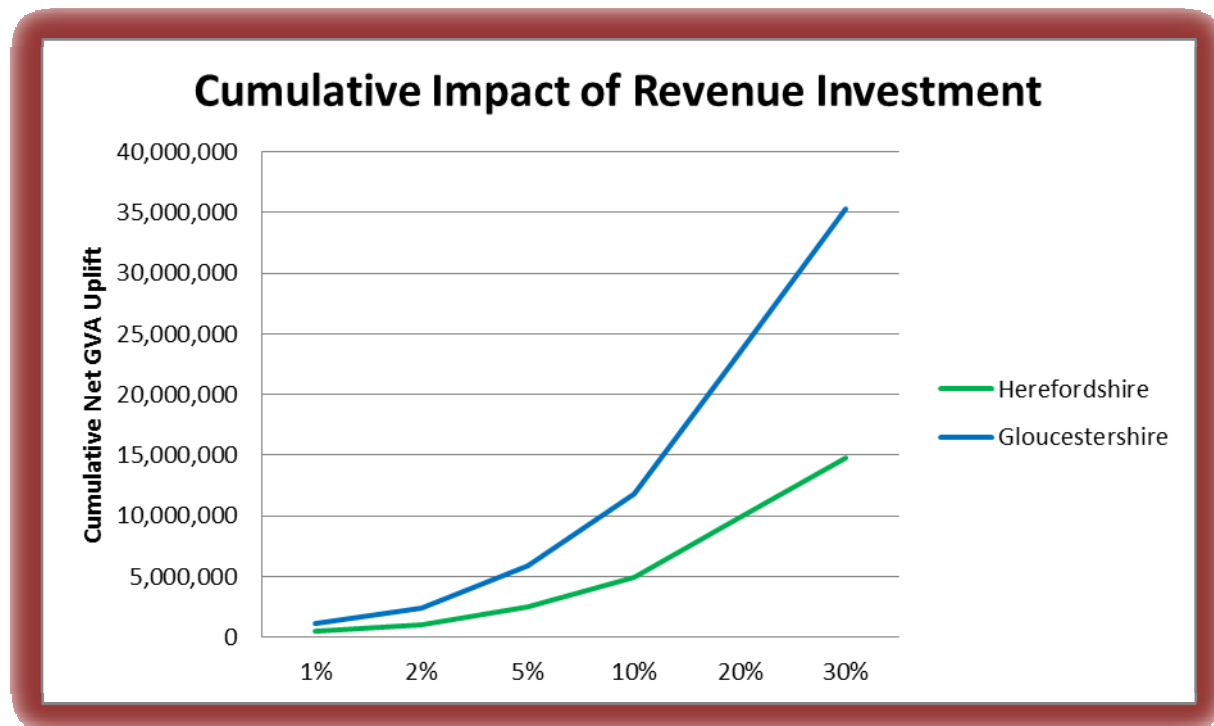


Figure 2

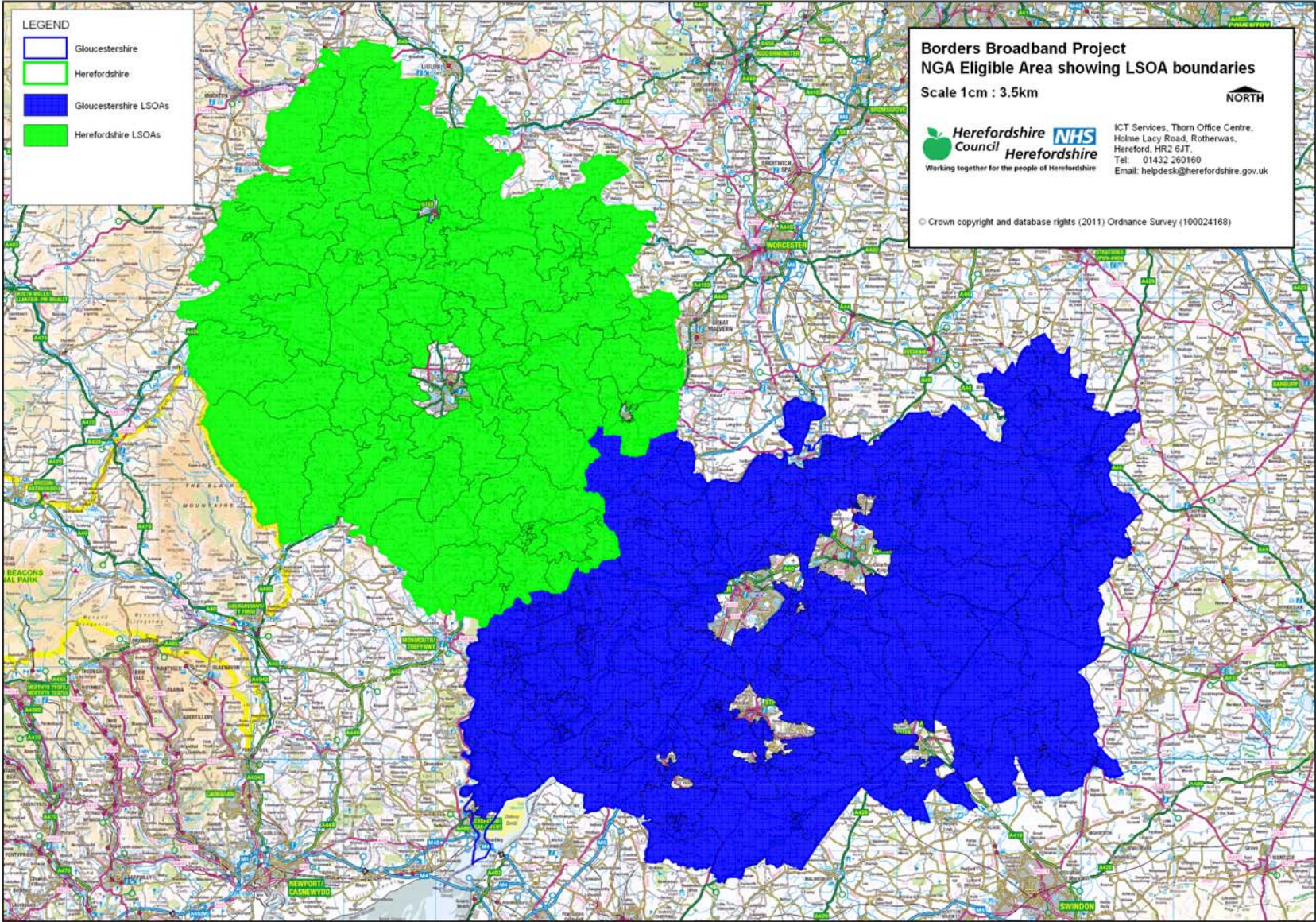
d) Return on Revenue Investment

- i. The ROI is the Cumulative Impact / Initial Public Sector Subsidy. As the level of public subsidy available is relatively static, the ROI is almost exclusively dependent upon the increases in Take Up and Optimisation of NGA services which have been facilitated through demand stimulation activities.
 1. Based on 50% NGA Take Up (Deadweight + 30%), the ROI is estimated at 59:1
 2. Based on 40% NGA Take Up (Deadweight + 20%), the ROI is estimated at 39.3:1
 3. Based on 30% NGA Take Up (Deadweight + 10%), the ROI is estimated at 19.7:1
 4. Based on 25% NGA Take Up (Deadweight + 5%), the ROI is estimated at 9.8:1
 5. Based on 22% NGA Take Up (Deadweight + 2%), the ROI is estimated at 3.9:1
 6. Based on 21% NGA Take Up (Deadweight + 1%), the ROI is estimated at 2:1

9. Combined Impact

- e) Based upon an NGA deployment that reaches 90% of the eligible investment area and demand stimulation activities that encourage a 10% greater take up (and optimisation) than the base case, the annual GVA Uplift is estimated to equate to £45.9M and a cumulative Impact over 10 years of £419.5M. This would result in a ROI of 14.5:1.

Appendix 1 LSOA's in Area Eligible for NGA Investment



Appendix 2 GVA from Capital Investment

GVA Impact of Capital Investment in Eligible Area		Sensitivity Analysis Proportional NGA Coverage 100%					
		100%	90%	80%	70%	60%	50%
Herefordshire	Total Businesses in the eligible area with 1-10 employees	5,098	4001	2,783	2063	1612	1206
	Average Turnover of Businesses in the eligible area with 1-10 employees	352,000	352,000	352,000	352,000	352,000	352,000
	Total Businesses in the eligible area with 11-49 employees	516	432	294	240	197	161
	Average Turnover of Businesses in the eligible area with 11-49 employees	2,118,000	2,118,000	2,118,000	2,118,000	2,118,000	2,118,000
	Total Businesses in the eligible area with 50-199 employees	75	70	47	38	32	29
	Average Turnover of Businesses in the eligible area with 50-199 employees	11,438,000	11,438,000	11,438,000	11,438,000	11,438,000	11,438,000
	Total Businesses in the eligible area with 200+ employees	14	14	11	10	10	9
	Average Turnover of Businesses in the eligible area with 200+ employees	158,966,000	158,966,000	158,966,000	158,966,000	158,966,000	158,966,000
	Herefordshire Baseline	5,970,758,000	5,349,512,000	3,888,520,000	3,258,800,000	2,940,346,000	2,527,906,000
Gloucestershire	Total Businesses in the eligible area with 1-10 employees	12,140	10,979	10,133	9081	7606	6188
	Average Turnover of Businesses in the eligible area with 1-10 employees	312,000	312,000	312,000	312,000	312,000	312,000
	Total Businesses in the eligible area with 11-49 employees	1,250	1153	1083	1,000	861	708
	Average Turnover of Businesses in the eligible area with 11-49 employees	1,752,000	1,752,000	1,752,000	1,752,000	1,752,000	1,752,000
	Total Businesses in the eligible area with 50-199 employees	232	219	208	198	170	154
	Average Turnover of Businesses in the eligible area with 50-199 employees	8,748,000	8,748,000	8,748,000	8,748,000	8,748,000	8,748,000
	Total Businesses in the eligible area with 200+ employees	45	43	41	40	38	32
	Average Turnover of Businesses in the eligible area with 200+ employees	138,067,000	138,067,000	138,067,000	138,067,000	138,067,000	138,067,000
	Gloucestershire Baseline	14,220,231,000	13,298,197,000	12,539,243,000	11,840,056,000	10,615,250,000	8,936,408,000
Total Baseline	20,190,989,000	18,647,709,000	16,427,763,000	15,098,856,000	13,555,596,000	11,464,314,000	
Take Up	20%	20%	20%	20%	20%	20%	
Herefordshire Turnover of those taking an NGA service	1,194,151,600	1,069,902,400	777,704,000	651,760,000	588,069,200	505,581,200	
Gloucestershire Turnover of those taking an NGA service	2,844,046,200	2,659,639,400	2,507,848,600	2,368,011,200	2,123,050,000	1,787,281,600	
Total Turnover of those taking an NGA service	4,038,197,800	3,729,541,800	3,285,552,600	3,019,771,200	2,711,119,200	2,292,862,800	
Turnover Uplift	4%	4%	4%	4%	4%	4%	
Herefordshire Gross Outcome	47,766,064	42,796,096	31,108,160	26,070,400	23,522,768	20,223,248	
Gloucestershire Gross Outcome	113,761,848	106,385,576	100,313,944	94,720,448	84,922,000	71,491,264	
Total Gross Outcome	161,527,912	149,181,672	131,422,104	120,790,848	108,444,768	91,714,512	
Adittionality Ratio	0.9	0.9	0.9	0.9	0.9	0.9	
Herefordshire Net Annual Impact	42,989,458	38,516,486	27,997,344	23,463,360	21,170,491	18,200,923	
Gloucestershire Net Annual Impact	102,385,663	95,747,018	90,282,550	85,248,403	76,429,800	64,342,138	
Total Net Annual Impact	145,375,121	134,263,505	118,279,894	108,711,763	97,600,291	82,543,061	
Turnover / GVA Ratio	0.3	0.3	0.3	0.3	0.3	0.3	

Herefordshire Annual GVA Uplift	12,896,837	11,554,946	8,399,203	7,039,008	6,351,147	5,460,277
Gloucestershire Annual GVA Uplift	30,715,699	28,724,106	27,084,765	25,574,521	22,928,940	19,302,641
Total Annual GVA Uplift	43,612,536	40,279,051	35,483,968	32,613,529	29,280,087	24,762,918
Persistence	10	10	10	10	10	10
Herefordshire cumulative net GVA Uplift	128,968,373	115,549,459	83,992,032	70,390,080	63,511,474	54,602,770
Gloucestershire cumulative net GVA Uplift	307,156,990	287,241,055	270,847,649	255,745,210	229,289,400	193,026,413
Total cumulative net GVA Uplift	436,125,362	402,790,514	354,839,681	326,135,290	292,800,874	247,629,182
Public Sector Investment	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000	28,000,000
Return on Investment	15.58	14.39	12.67	11.65	10.46	8.84

Notes

This model is indicative only

The model does not account for the deadweight of interest increases over the term of benefit

The model also assumes a flat rate of 4% turnover increase due to optimisation. In reality this would only be achieved by year 6/7 with turnover increasing to that point and then exceeding 4% beyond that point.

There is an inherent optimism bias in this approach

Also of note is that the model assumes deployment is completed across the board from year 1 but it will take c. 5 years to fully deploy. This also leads to an optimism bias

The optimism bias has been offset by reducing the persistence to just 10 years while the project term will be at least 14 and the infrastructure life at least 25. Additionally the model does not account for the uplift from Non NGA Infrastructure

Take Up is a proxy and it is the optimisation of those taking a service which will achieve the productivity increases

In the <100% models, the business base has been estimated by removing a proportion of the most sparsely populated eligible LSOAs. This does not accurately reflect the potential <100% deployment footprints

Appendix 3 GVA from Revenue Investment

GVA Impact of Revenue Investment Across the County							
Herefordshire	Total Businesses in the county with 1-10 employees	5,098					
	Average Turnover of Businesses in the county with 1-10 employees	352,000					
	Total Businesses in the county with 11-49 employees	516					
	Average Turnover of Businesses in the county with 11-49 employees	2,118,000					
	Total Businesses in the county with 50-199 employees	75					
	Average Turnover of Businesses in the county with 50-199 employees	11,438,000					
	Total Businesses in the county with 200+ employees	14					
	Average Turnover of Businesses in the county with 200+ employees	158,966,000					
Herefordshire Baseline		5,970,758,000					
Gloucestershire	Total Businesses in the county with 1-10 employees	12,140					
	Average Turnover of Businesses in the county with 1-10 employees	312,000					
	Total Businesses in the county with 11-49 employees	1,250					
	Average Turnover of Businesses in the county with 11-49 employees	1,752,000					
	Total Businesses in the county with 50-199 employees	232					
	Average Turnover of Businesses in the county with 50-199 employees	8,748,000					
	Total Businesses in the county with 200+ employees	45					
	Average Turnover of Businesses in the county with 200+ employees	138,067,000					
Gloucestershire Baseline		14,220,231,000					
Total Baseline		20,190,989,000					
Total with Take Up Deadweight of 20%		4,038,197,800					
Sensitivity Analysis on Take Up and Optimisation above 20%		1%	2%	5%	10%	20%	30%
Herefordshire Turnover of those taking an NGA service		59,707,580	119,415,160	298,537,900	597,075,800	1,194,151,600	1,791,227,400
Gloucestershire Turnover of those taking an NGA service		142,202,310	284,404,620	711,011,550	1,422,023,100	2,844,046,200	4,266,069,300
Total Turnover of those taking an NGA service		201,909,890	403,819,780	1,009,549,450	2,019,098,900	4,038,197,800	6,057,296,700
Turnover Uplift		2%					
Herefordshire Gross Outcome		1,194,152	2,388,303	5,970,758	11,941,516	23,883,032	35,824,548
Gloucestershire Gross Outcome		2,844,046	5,688,092	14,220,231	28,440,462	56,880,924	85,321,386
Total Gross Outcome		4,038,198	8,076,396	20,190,989	40,381,978	80,763,956	121,145,934
Additionality Ratio		0.46					
Herefordshire Net Annual Impact		549,310	1,098,619	2,746,549	5,493,097	10,986,195	16,479,292
Gloucestershire Net Annual Impact		1,308,261	2,616,523	6,541,306	13,082,613	26,165,225	39,247,838
Total Net Annual Impact		1,857,571	3,715,142	9,287,855	18,575,710	37,151,420	55,727,130
Turnover / GVA Ratio		0.3					
Herefordshire Annual GVA Uplift		164,793	329,586	823,965	1,647,929	3,295,858	4,943,788

Gloucestershire Annual GVA Uplift	392,478	784,957	1,962,392	3,924,784	7,849,568	11,774,351
Total Annual GVA Uplift	557,271	1,114,543	2,786,356	5,572,713	11,145,426	16,718,139
Persistence	3					
Herefordshire cumulative net GVA Uplift	494,379	988,758	2,471,894	4,943,788	9,887,575	14,831,363
Gloucestershire cumulative net GVA Uplift	1,177,435	2,354,870	5,887,176	11,774,351	23,548,703	35,323,054
Total cumulative net GVA Uplift	1,671,814	3,343,628	8,359,069	16,718,139	33,436,278	50,154,417
Public Sector Investment	850,000					
Return on Investment	1.97	3.93	9.83	19.67	39.34	59.01

Notes

This model is indicative only

The model does not account for the deadweight of interest increases over the term of benefit

The model also assumes a flat rate of 2% turnover increase due to optimisation. This is due to the assumed persistence of the benefits being only 3 years while evidence shows that c4% is achieved by year 6/7 with turnover increasing to that point.

Also of note is that the model assumes deployment is completed across the board from year 1 and is available to optimise but it will take c5 years to fully deploy. This leads to an optimism bias. Take Up is a proxy and it is the optimisation of those taking a service which will achieve the productivity increases. Therefore without focus demand stimulation activities that ensure businesses are in a position to maximise their use of ICT these gains will not be achieved.

Appendix 4 Cumulative GVA Uplift from Capital and Revenue Investment

Cumulative Impact of Revenue and Capital Investment

90% Coverage of NGA and a 10% increase in Take Up and Optimisation

Herefordshire Annual GVA Uplift	£13,202,875
Herefordshire Cumulative GVA Uplift	£120,493,247
Gloucestershire Annual GVA Uplift	£32,648,890
Gloucestershire Cumulative GVA Uplift	£299,015,406
Total Annual GVA Uplift	£45,851,764
Total Cumulative GVA Uplift	£419,508,653

Appendix 5 NGA Coverage Sensitivity Analysis Map (Note: Each 'layer' is cumulative e.g. 100% = 100% + 90% + 80% + 70%)

