M-commerce and 4G mobile broadband services

Response to the Ofcom consultation on the assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues

Submission by eBay UK

Executive summary

- Mobile broadband is playing an increasingly important role in people's lives, and as a result, it is an increasingly important factor in the retail landscape.

- According to research commissioned by eBay and carried out by retail experts Verdict Research, mobile commerce is currently worth £1.35bn in sales to the UK economy. That figure is set to grow to £5.82bn by 2016 and to £19.26bn by 2021.

- Despite this, the contribution of m-commerce has to date not been adequately recognised. eBay believes Ofcom needs to take the interests of m-commerce into account when considering the issues raised by the consultation on the 4G auction.

- The reliability of mobile broadband represents a significant barrier to higher m-commerce sales. According to our research, 64% of consumers believe connection speed is a significant barrier, while 63% cite the reliability of connections, 62% cite the cost of a connection, and 52% cite network coverage.

- These barriers are having a significant impact on m-commerce sales. eBay's research suggests that m-commerce sales could be some £1.29bn higher if these barriers were eliminated – almost double the current level of sales.

- Some parts of the country are worse affected than others. According to eBay's research, some 16% of the country is located in an "m-commerce not-spot" where the level of m-commerce is significantly below the national average.

- While many m-commerce not-spots are located in sparsely populated rural areas, the problem also exists in a number of significant urban centres such as central London and Swansea. This suggests that other problems such as connection speeds and connection reliability may be inhibiting m-commerce purchases in these areas in addition to network coverage.

- There is strong consumer support across the board for regulatory action to improve rural mobile broadband coverage, to improve urban mobile broadband reliability, to improve mobile broadband coverage on transport routes, and to keep costs low. When asked to choose a priority from among these options, keeping costs low is overwhelmingly favoured by consumers. Improving coverage on transport routes is the next most popular option.

- Our evidence shows that unreliable mobile broadband is holding m-commerce back. But at the same time, consumers' number one concern is the cost of mobile. Ofcom therefore needs to target its intervention as effectively as possible, requiring greater investment where it will make the most impact for consumers. Based on our research, we believe Ofcom should focus on improving coverage on major transport routes,

because this is where investment will make the most difference.

- In light of the importance of minimising costs for consumers, we would encourage Ofcom to use this opportunity to ensure that there is a competitive four-player market in mobile broadband and that all potential players should have an equal chance of purchasing sufficient low-frequency spectrum in order to guarantee the quality of service and speed of connection for consumers.

1. Introduction

Mobile broadband services are playing an increasingly important role in people's lives. The growth of smartphone ownership means that a rapidly growing proportion of the population now has access to an internet connection on the move. According to Ofcom's own figures, 23% of the population used their mobile phones for data or web access in 2010[1], and that figure continues to grow. According to consumer research commissioned by eBay this year, 43% of the population now owns a smartphone[2].

As a consequence, mobile broadband is playing an increasingly important role in retail. As the UK's market leader in m-commerce, eBay has therefore undertaken a major piece of research into the current state of the m-commerce market and the scale of the future opportunity. As well as examining the commercial implications of the changes currently underway, we have undertaken an in-depth analysis of consumer attitudes and have sought to identify the barriers which threaten to obstruct the development of m-commerce. This submission sets out our findings.

2. The importance of m-commerce

The auction of new 4G licences for mobile broadband services will deliver a significant boost for m-commerce, resulting in a huge financial dividend for the UK economy. Just as the growth of home internet connections stimulated the development of a huge online retail sector, we now stand on the brink of a similar transformation brought about by mobile.

Yet to date, the potential contribution of m-commerce to UK economic growth has not been adequately recognised. In its consultation on the award of new 4G licences, Ofcom explicitly mentions the importance of 4G services in supporting video streaming, social networking, mobile gaming, instant messaging and email. In contrast, it makes no explicit reference to the potential of 4G to stimulate growth and innovation in mobile retail.

Research commissioned by eBay indicates that mobile shopping could make a massive future contribution to the UK economy. According to the research, conducted by Verdict Research, the m-commerce market in the UK is currently worth some £1.35bn in sales, and is set to grow to £5.82bn by 2016 and to £19.26bn by 2021[3].

eBay has been at the forefront of developing the m-commerce market. eBay mobile applications are available in more than 190 countries and eight language, and have been downloaded over 35 million times globally. There are up to 380,000 daily visits to eBay.co.uk via mobile apps, and more than 170,000 UK shoppers spend over £30 with the eBay mobile app per week. In 2010, global eBay sales via a mobile device more than tripled, generating

[1] The Communications Market 2010, Ofcom
[2] Verdict Research, fieldwork conducted 11-16 May 2011, sample size 1,500.
[3] Modelling by Verdict Research. See Annex 3: Methodology for further information.

$2 billion in sales – up from $600m in 2009. This is set to double again in 2011 to over $4 billion[4].

With m-commerce already established as an important and growing force in retail, eBay believes that it is importance for the needs of m-commerce and the views of mobile shoppers to be taken into account by Ofcom when it is considering the issues raised by the 4G consultation.

3. Barriers to m-commerce

Although m-commerce is already worth £1.35bn to the UK economy, eBay believes that the economic contribution it makes could be even greater. Mobile shoppers face a number of frustrations and obstacles which currently deter them from spending, a number of which relate to the quality of mobile broadband. We believe that through co-ordinated action, many of these obstacles could be removed, thereby stimulating consumer demand and helping to support the wider retail sector at a time when demand remains flat.

eBay commissioned Verdict Research[5] to undertake a detailed investigation into the views of consumers into mobile shopping and the barriers which deter them from using their mobiles more for shopping. This investigated a range of factors, some related to the quality of mobile broadband, and others not. Figure 1 summarises the key findings, ranking the barriers cited by consumers as either significant or very significant.

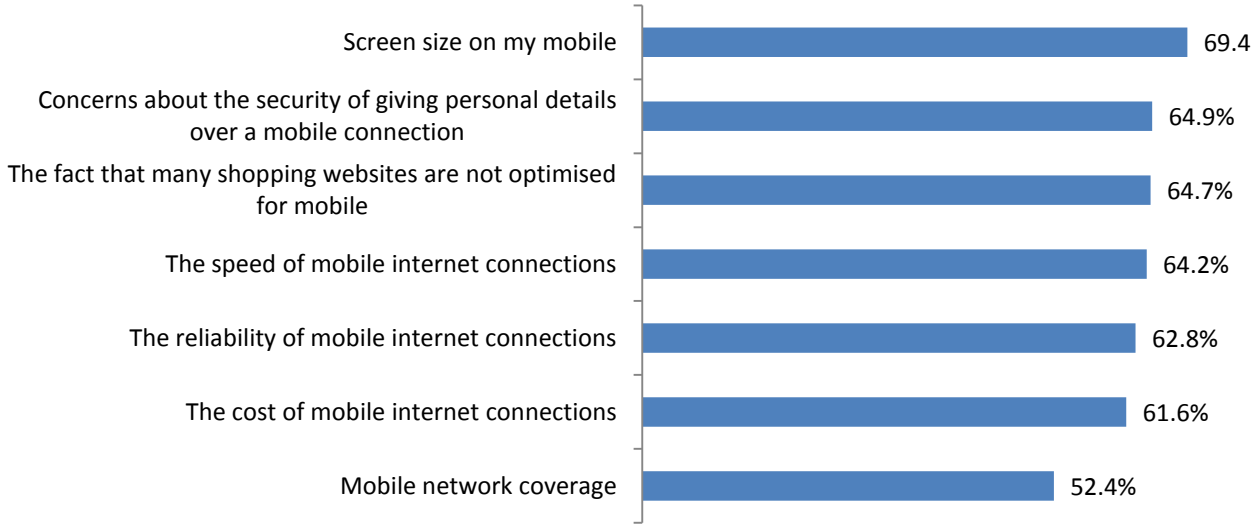

Figure 1: Barriers to m-commerce

The key points emerging from this research are:

- The most significant barriers to m-commerce do not relate to mobile broadband quality. Indeed, the top three barriers are screen size (69%), security concerns (65%) and the lack of website optimisation for m-commerce (65%).
- The speed of mobile broadband is a significant barrier, cited by 64% of consumers.
- Connection reliability is also a significant barrier, cited by 63% of consumers.
- Cost too is a significant concern, cited by 62% of consumers.

[4] eBay sales data.
[5] Verdict Research, fieldwork conducted 11-16 May 2011, sample size 1,500.

- Network coverage is the lowest ranked of all the factors, cited as a significant barrier by only 52% of consumers.

Through our research, it became clear that there is a degree of variation between customers of different network operators in the level of frustration they feel towards different barriers to m-commerce. We believe that this information could prove useful to regulators in pinpointing where the most serious problems lie. Figure 2 provides a summary of the key results.

To what extent do the following factors make you less likely to shop via your mobile?	All	Three	Tesco	O2	Virgin	Orange	Vodafone	TMobile
The speed of mobile internet connections	64%	59%	59%	65%	64%	64%	65%	68%
The reliability of mobile internet connections	63%	64%	61%	62%	60%	64%	61%	69%
The cost of mobile internet connections	62%	54%	66%	60%	64%	62%	65%	63%
Mobile network coverage	52%	57%	49%	50%	53%	52%	54%	58%
Sample	*1500*	*101*	*71*	*375*	*97*	*341*	*269*	*209*

Figure 2: Barriers to m-commerce by operator

These findings underscore the important role that the award of new 4G licences can play in fostering the development of m-commerce, both by improving the reliability of mobile broadband connections and by allowing consumers to enjoy faster connection speeds. It is important that the consumer frustrations identified here are addressed as quickly as possible, enabling network operators to make the investment necessary to respond to consumer concerns.

The findings also underline the importance of ensuring that the 4G auction improves the competitiveness of the mobile broadband market. The cost of mobile broadband is a significant consumer concern, and competition remains the best way of ensuring that prices are kept as low as possible.

Yet new infrastructure is not the only way that network operators can help foster m-commerce. Security is also a major issue. The research shows that consumers are nervous about sending payment details and personal information over mobile broadband networks. Working together, networks and retailers can play an important role in reassuring consumers about the security of their personal information when they are shopping through their mobiles.

4. M-commerce not-spots and the costs of unreliable mobile broadband

Our research clearly shows that consumers face currently face significant obstacles when seeking to make m-commerce purchases. As part of our analysis, we have sought both to quantify the overall cost of those barriers to the UK economy, and to establish in which parts of the country m-commerce is being held back the most.

Our analysis suggests that the total cost of unreliable mobile broadband to the UK economy in terms of lost sales is currently at least £1.29bn a year[6]. This figure is based on detailed consumer research into the extent to which consumers are currently deterred from making purchases as a result of mobile broadband reliability.

[6] Modelling by eBay/Verdict Research. See Annex 3: Methodology for further information.

Furthermore, it is clear that there are certain parts of the country which are "m-commerce not-spots"[7], where the level of m-commerce sales relative to e-commerce sales is significantly below the national average. Some 16% of the country is at least 20% below the national average. The ten worst affected areas in the UK are set out in Figure 3.

m-commerce "not-spots"	m-commerce sales relative to national average
Outer Hebrides	-58.3%
Lerwick	-57.0%
Kirkwall	-50.1%
Llandrindod Wells	-47.4%
London (West Central)	-37.7%
Inverness	-34.9%
Galashiels	-34.8%
Perth	-34.4%
Shrewsbury	-27.3%
Dumfries	-26.9%

Figure 3: m-commerce "not-spots"

Many of the areas identified as "m-commerce not-spots" are relatively rural and sparsely populated. The findings of our research are therefore in line with Ofcom's own work on mobile coverage not-spots, and it is likely that the extent of mobile broadband coverage is a major factor in explaining why these areas are not fulfilling their potential in m-commerce.

However, the problem is not confined to rural and isolated areas. London (West Central) features in the top ten worst affected "not-spots", and five of the eight London postal areas are below the national average. This suggests that other problems such as connection speeds and connection reliability may be inhibiting m-commerce purchases in these areas in addition to network coverage.

5. M-commerce and the 4G auction

In order to help inform Ofcom's thinking in respect of the issues raised by the 4G auction, eBay has undertaken detailed research into consumer attitudes towards potential policy remedies. Specifically, the potential policy objectives we tested with consumers were:

- Measures to improve internet coverage in rural areas
- Measures to improve the reliability of internet connections in urban areas
- Measures to provide better internet coverage on transport routes (e.g. railways and roads) so people can go online while they're on the move
- Measures to reduce the cost of mobile internet provision

Figure 4 summarises the findings of our research[8]. All four potential policy objectives received strong support from consumers, and the level of support was broadly comparable for each of them. However, when asked to prioritise among the options, a much starker picture emerged, with consumers strongly favouring action to reduce the cost of mobile broadband provision as the most important form of policy intervention. The second most popular option, though a long way behind, was action to provide better broadband coverage on transport routes.

[7] Modelling by eBay. See Annex 3: Methodology for further information.
[8] Verdict Research, fieldwork conducted 11-16 May 2011, sample size 1,500.

Mobile network providers should be required to...	Strongly agree and agree	Top priority
...improve internet coverage in rural areas	79%	5%
...improve the reliability of internet connections in urban areas	76%	9%
...provide better internet coverage on transport routes (e.g. railways and roads) so people can go online while they're on the move	72%	17%
...reduce the cost of mobile internet provision	79%	63%
Sample	*1500*	

Figure 4: Consumers views on potential policy interventions

6. Conclusion

M-commerce sales are already worth some £1.35bn to the UK economy, and are set to grow fourteen-fold over the next ten year. It is therefore essential for Ofcom to seriously consider the interests of m-commerce when considering what regulatory approach to take towards mobile broadband provision.

The reliability of mobile broadband currently significantly inhibits m-commerce sales. Our estimates suggest that lost sales due to poor reliability currently cost the economy some £1.28bn a year.

Our analysis shows that these problems particularly affect certain parts of the country, with some 16% of areas being "m-commerce not-spots", where m-commerce levels are at least 20% below the national average.

To address these problems, we call on Ofcom to consider the views of m-commerce consumers when deciding the approach towards coverage obligations and the promotion of competition.

In doing so, we believe that Ofcom needs to target its intervention as effectively as possible, requiring greater investment where it will make the most impact for consumers. Based on our research, we believe Ofcom should focus on improving coverage on major transport routes, because this is where investment will make the most difference.

In addition, in light of the importance of minimising costs for consumers, we would encourage Ofcom to use this opportunity to ensure that there is a competitive four-player market in mobile broadband and that all potential players should have an equal chance of purchasing sufficient low-frequency spectrum in order to guarantee the quality of service and speed of connection for consumers.

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Annex 1: m-commerce “not-spots”

m-commerce "not-spots" by postal area	m-commerce levels relative to national average	Estimated cost of barriers to m-commerce
UK total	-	-£1,284,800,000
Aberdeen	-23.7%	-£11,800,000
Bath	-4.0%	-£11,400,000
Birmingham	75.9%	-£11,800,000
Blackburn	6.4%	-£11,100,000
Blackpool	1.4%	-£6,600,000
Bolton	14.1%	-£6,800,000
Bournemouth	9.8%	-£12,900,000
Bradford	23.5%	-£10,600,000
Brighton	11.0%	-£16,100,000
Bristol	8.5%	-£19,300,000
Bromley	15.8%	-£5,100,000
Cambridge	-6.9%	-£10,100,000
Canterbury	0.8%	-£11,400,000
Cardiff	3.3%	-£17,800,000
Carlisle	-17.9%	-£8,400,000
Chelmsford	22.6%	-£13,300,000
Chester	61.7%	-£6,100,000
Cleveland	0.8%	-£11,600,000
Colchester	10.2%	-£9,400,000
Coventry	8.5%	-£17,700,000
Crewe	11.2%	-£6,900,000
Croydon	9.0%	-£6,800,000
Darlington	-0.9%	-£8,200,000
Dartford	23.4%	-£7,300,000
Derby	19.8%	-£14,700,000
Doncaster	1.8%	-£17,800,000
Dorchester	-19.9%	-£6,500,000
Dudley	6.5%	-£8,600,000
Dumfries	-26.9%	-£3,900,000
Dundee	-22.4%	-£5,700,000
Durham	-6.8%	-£6,500,000
Edinburgh	-4.4%	-£13,000,000
Enfield	24.1%	-£5,400,000
Exeter	-13.0%	-£15,900,000
Falkirk and Stirling	-7.5%	-£4,500,000
Galashiels	-34.8%	-£3,000,000
Glasgow	1.5%	-£14,100,000
Gloucester	-4.4%	-£16,000,000
Guernsey	-20.2%	-£1,000,000
Guildford	6.3%	-£17,000,000
Halifax	26.3%	-£3,200,000
Harrogate	-1.3%	-£3,200,000
Harrow	12.4%	-£8,000,000
Hemel Hempstead	14.6%	-£10,900,000
Hereford	-26.2%	-£6,200,000
Huddersfield	14.8%	-£5,000,000
Hull	0.8%	-£8,400,000

m-commerce "not-spots" by postal area	m-commerce levels relative to national average	Estimated cost of barriers to m-commerce
Ilford	3.4%	-£6,600,000
Inverness	-34.9%	-£6,300,000
Ipswich	-12.1%	-£17,300,000
Isle of Man	-30.2%	-£2,600,000
Jersey	-43.2%	-£1,600,000
Kilmarnock	-12.9%	-£6,400,000
Kingston upon Thames	15.9%	-£9,500,000
Kirkcaldy	-18.9%	-£7,300,000
Kirkwall	-50.1%	-£2,200,000
Lancaster	-20.7%	-£9,000,000
Leeds	27.7%	-£11,100,000
Leicester	11.7%	-£20,200,000
Lerwick	-57.0%	-£1,100,000
Lincoln	-13.8%	-£9,400,000
Liverpool	8.3%	-£13,200,000
Llandrindod Wells	-47.4%	-£2,100,000
Llandudno	-20.2%	-£15,300,000
London E	-2.5%	-£20,800,000
London EC	-7.5%	-£1,500,000
London N	9.6%	-£13,900,000
London NW	-4.0%	-£10,500,000
London SE	4.9%	-£17,400,000
London SW	13.6%	-£13,400,000
London W	-3.8%	-£11,400,000
London WC	-37.7%	-£1,400,000
Luton	9.8%	-£7,600,000
Manchester	9.9%	-£20,200,000
Milton Keynes	2.5%	-£14,100,000
Motherwell	-5.9%	-£5,400,000
Newcastle upon Tyne	8.5%	-£17,800,000
Newport	-2.1%	-£10,500,000
Northampton	2.7%	-£16,500,000
Northern Ireland	-3.3%	-£20,900,000
Norwich	-14.7%	-£20,700,000
Nottingham	5.1%	-£26,100,000
Oldham	17.4%	-£8,000,000
Outer Hebrides	-58.3%	-£1,200,000
Oxford	-2.7%	-£14,100,000
Paisley	-20.2%	-£5,600,000
Perth	-34.4%	-£4,500,000
Peterborough	-11.3%	-£27,700,000
Plymouth	-11.1%	-£14,800,000
Portsmouth	6.4%	-£17,600,000
Preston	9.8%	-£10,600,000
Reading	12.3%	-£16,800,000
Redhill	9.7%	-£11,500,000
Rochester	18.0%	-£12,300,000
Romford	27.7%	-£8,400,000
Salisbury	-0.9%	-£5,900,000
Sheffield	17.1%	-£23,800,000
Shrewsbury	-27.3%	-£11,700,000
Slough	14.9%	-£7,600,000

m-commerce "not-spots" by postal area	m-commerce levels relative to national average	Estimated cost of barriers to m-commerce
Southall	13.8%	-£6,300,000
Southampton	7.3%	-£14,100,000
Southend-on-Sea	19.9%	-£10,200,000
St Albans	11.9%	-£4,700,000
Stevenage	11.3%	-£8,900,000
Stockport	20.5%	-£10,900,000
Stoke-on-Trent	6.7%	-£13,900,000
Sunderland	-3.2%	-£4,300,000
Sutton	21.7%	-£3,500,000
Swansea	-20.0%	-£18,900,000
Swindon	7.3%	-£10,400,000
Taunton	-14.8%	-£10,600,000
Telford	0.9%	-£5,200,000
Tonbridge	-4.3%	-£18,100,000
Torquay	-7.5%	-£7,900,000
Truro	-26.5%	-£10,200,000
Twickenham	10.9%	-£9,500,000
Wakefield	18.6%	-£9,300,000
Walsall	18.2%	-£8,100,000
Warrington	20.8%	-£10,100,000
Watford	8.8%	-£5,600,000
Wigan	14.5%	-£5,500,000
Wolverhampton	15.3%	-£6,500,000
Worcester	-9.3%	-£8,000,000
York	-6.2%	-£13,700,000

Annex 2: Current and future value of UK m-commerce sales

Postal area	2011	2016	2021
Aberdeen	£6,900,000	£29,900,000	£98,900,000
Bath	£9,800,000	£42,400,000	£140,200,000
Birmingham	£66,400,000	£286,200,000	£946,500,000
Blackburn	£11,700,000	£50,400,000	£166,600,000
Blackpool	£6,300,000	£27,100,000	£89,700,000
Bolton	£8,300,000	£35,600,000	£117,800,000
Bournemouth	£14,500,000	£62,700,000	£207,500,000
Bradford	£15,600,000	£67,200,000	£222,400,000
Brighton	£18,600,000	£80,200,000	£265,300,000
Bristol	£21,200,000	£91,200,000	£301,600,000
Bromley	£6,400,000	£27,700,000	£91,600,000
Cambridge	£8,200,000	£35,500,000	£117,300,000
Canterbury	£10,800,000	£46,500,000	£153,800,000
Cardiff	£17,700,000	£76,200,000	£252,000,000
Carlisle	£5,500,000	£23,800,000	£78,600,000
Chelmsford	£19,200,000	£82,800,000	£274,000,000
Chester	£21,500,000	£92,700,000	£306,700,000
Cleveland	£11,000,000	£47,500,000	£157,000,000
Colchester	£10,700,000	£46,100,000	£152,600,000
Coventry	£19,400,000	£83,800,000	£277,300,000
Crewe	£8,000,000	£34,300,000	£113,400,000
Croydon	£7,500,000	£32,200,000	£106,600,000
Darlington	£7,500,000	£32,300,000	£107,000,000
Dartford	£10,700,000	£46,200,000	£152,900,000
Derby	£20,200,000	£87,000,000	£287,900,000
Doncaster	£17,200,000	£74,300,000	£245,700,000
Dorchester	£4,100,000	£17,600,000	£58,100,000
Dudley	£9,100,000	£39,200,000	£129,500,000
Dumfries	£2,100,000	£9,100,000	£30,100,000
Dundee	£3,400,000	£14,800,000	£48,900,000
Durham	£5,300,000	£22,800,000	£75,300,000
Edinburgh	£11,100,000	£47,900,000	£158,500,000
Enfield	£8,000,000	£34,500,000	£114,000,000
Exeter	£11,500,000	£49,400,000	£163,400,000
Falkirk and Stirling	£3,600,000	£15,400,000	£51,000,000
Galashiels	£1,400,000	£6,000,000	£20,000,000
Glasgow	£13,500,000	£58,300,000	£192,900,000
Gloucester	£13,700,000	£59,000,000	£195,000,000
Guernsey	£600,000	£2,800,000	£9,200,000
Guildford	£17,900,000	£77,100,000	£255,200,000
Halifax	£5,000,000	£21,400,000	£70,900,000
Harrogate	£2,900,000	£12,600,000	£41,500,000
Harrow	£9,500,000	£40,900,000	£135,100,000
Hemel Hempstead	£13,500,000	£58,300,000	£192,900,000
Hereford	£3,400,000	£14,500,000	£48,100,000
Huddersfield	£6,200,000	£26,900,000	£89,100,000
Hull	£8,000,000	£34,600,000	£114,600,000
Ilford	£6,600,000	£28,400,000	£93,800,000
Inverness	£2,900,000	£12,600,000	£41,800,000
Ipswich	£12,700,000	£54,800,000	£181,100,000
Isle of Man	£1,300,000	£5,500,000	£18,200,000

Postal area	2011	2016	2021
Jersey	£600,000	£2,700,000	£9,100,000
Kilmarnock	£4,600,000	£19,700,000	£65,000,000
Kingston upon Thames	£12,000,000	£51,800,000	£171,200,000
Kirkcaldy	£4,700,000	£20,100,000	£66,400,000
Kirkwall	£700,000	£3,100,000	£10,200,000
Lancaster	£5,600,000	£24,300,000	£80,300,000
Leeds	£17,800,000	£76,900,000	£254,400,000
Leicester	£23,600,000	£101,800,000	£336,800,000
Lerwick	£300,000	£1,100,000	£3,600,000
Lincoln	£6,700,000	£28,700,000	£95,100,000
Liverpool	£14,400,000	£62,100,000	£205,400,000
Llandrindod Wells	£700,000	£3,200,000	£10,500,000
Llandudno	£9,600,000	£41,600,000	£137,500,000
London E	£18,500,000	£79,800,000	£263,900,000
London EC	£1,200,000	£5,000,000	£16,700,000
London N	£15,600,000	£67,400,000	£222,900,000
London NW	£9,100,000	£39,300,000	£129,900,000
London SE	£17,800,000	£76,700,000	£253,800,000
London SW	£16,300,000	£70,300,000	£232,500,000
London W	£9,900,000	£42,700,000	£141,100,000
London WC	£600,000	£2,700,000	£9,100,000
Luton	£8,600,000	£37,200,000	£123,000,000
Manchester	£22,800,000	£98,200,000	£324,700,000
Milton Keynes	£13,800,000	£59,700,000	£197,400,000
Motherwell	£4,500,000	£19,600,000	£64,900,000
Newcastle upon Tyne	£19,600,000	£84,400,000	£279,200,000
Newport	£9,400,000	£40,500,000	£134,000,000
Northampton	£16,200,000	£70,000,000	£231,400,000
Northern Ireland	£18,300,000	£79,100,000	£261,500,000
Norwich	£14,500,000	£62,600,000	£207,200,000
Nottingham	£26,900,000	£115,900,000	£383,300,000
Oldham	£10,400,000	£44,900,000	£148,600,000
Outer Hebrides	£300,000	£1,200,000	£3,900,000
Oxford	£12,500,000	£54,000,000	£178,700,000
Paisley	£3,500,000	£15,200,000	£50,400,000
Perth	£2,100,000	£8,900,000	£29,500,000
Peterborough	£20,700,000	£89,200,000	£295,200,000
Plymouth	£11,100,000	£48,000,000	£158,900,000
Portsmouth	£18,600,000	£80,400,000	£265,800,000
Preston	£11,900,000	£51,300,000	£169,700,000
Reading	£19,800,000	£85,300,000	£282,100,000
Redhill	£12,900,000	£55,600,000	£184,000,000
Rochester	£16,300,000	£70,500,000	£233,000,000
Romford	£13,500,000	£58,300,000	£192,800,000
Salisbury	£5,400,000	£23,400,000	£77,600,000
Sheffield	£30,900,000	£133,100,000	£440,200,000
Shrewsbury	£6,300,000	£27,400,000	£90,500,000
Slough	£9,400,000	£40,600,000	£134,300,000
Southall	£7,700,000	£33,100,000	£109,500,000
Southampton	£15,100,000	£65,000,000	£214,800,000
Southend-on-Sea	£14,000,000	£60,400,000	£199,600,000
St Albans	£5,500,000	£23,600,000	£78,000,000
Stevenage	£10,300,000	£44,600,000	£147,400,000

Postal area	2011	2016	2021
Stockport	£15,100,000	£65,100,000	£215,200,000
Stoke-on-Trent	£14,700,000	£63,300,000	£209,300,000
Sunderland	£3,800,000	£16,400,000	£54,300,000
Sutton	£5,000,000	£21,500,000	£71,100,000
Swansea	£11,900,000	£51,500,000	£170,400,000
Swindon	£11,200,000	£48,300,000	£159,800,000
Taunton	£7,400,000	£32,100,000	£106,200,000
Telford	£4,900,000	£21,100,000	£69,900,000
Tonbridge	£15,500,000	£67,000,000	£221,500,000
Torquay	£6,400,000	£27,600,000	£91,400,000
Truro	£5,600,000	£24,200,000	£80,000,000
Twickenham	£10,900,000	£47,200,000	£156,100,000
Wakefield	£12,400,000	£53,500,000	£176,800,000
Walsall	£10,800,000	£46,600,000	£154,100,000
Warrington	£14,100,000	£60,900,000	£201,500,000
Watford	£6,200,000	£26,600,000	£87,900,000
Wigan	£6,800,000	£29,500,000	£97,400,000
Wolverhampton	£8,200,000	£35,400,000	£117,100,000
Worcester	£6,200,000	£26,800,000	£88,500,000
York	£11,300,000	£48,800,000	£161,600,000
UK total	£1,349,600,000	£5,821,800,000	£19,255,700,000

Annex 3: Research methodology

- The consumer polling was conducted by Verdict Research with 1,500 consumers between 11 and 16 May 2011. Verdict Research is the leading authority on UK and European retail markets. Its research publications, consultancy services and news bulletins offer unparalleled analysis on a large variety of retail sectors, issues, geographies and demographics. www.verdict.co.uk

- Estimates for the current and future value of m-commerce sales were calculated by Verdict Research. Verdict uses a variety of sources for its market forecasts and numbers. Consumer research is used to understand current consumer penetration and habits in the mobile space and this data is modelled and sense checked against retailer data and other industry sources. Forecasting is conducted using Verdict's rigorous integrated forecasting model that assesses retail's position in the broader UK economy and the relative performance of individual channels, including mobile. It also takes account of macro-level factors such as demographic change, consumer preferences, evolving technologies and economics. All forecasts and numbers are challenged in an internal analysts' forum to ensure that they are compatible with expectations of other retail channels and sectors and for retail as a whole.

- eBay's mobile "not-spots" analysis uses eBay's own sales data to compare levels of mobile commerce in each area relative to levels of ordinary e-commerce. An area is defined as a mobile not-spot if the ratio of m-commerce is 20% or more below the national average.

- The estimate of the current loss to the economy in m-commerce sales resulting from poor mobile broadband connections was calculated using consumer research conducted by Verdict into the extent to which consumers are currently deterred from spending via their mobiles. Our model calculates the lost value to the economy by taking the number of consumers who responded that they would spend "significantly more" if mobile broadband was more reliable, and calculating how much they would spend if they consumed at the level of consumers who are satisfied. To ensure a conservative estimate, consumers who responded that they would merely spend "somewhat more" are disregarded.

- The estimate of current and future regional spending levels via mobile is calculated using Verdict's nationwide estimates of current and future m-commerce spending combined with eBay's own detailed regional data on current m-commerce spending levels.

- The regional estimate of lost spending as a result of unreliable mobile broadband is calculated by combining eBay's regional analysis of mobile not-spots with eBay's nationwide estimate of the loss to the economy from unreliable mobile broadband and eBay's regional estimate of current m-commerce spending levels.

- All locational information is based on consumers' registered home addresses based on eBay's own data.