1. Leeds City Region’s Digital Vision

The Vision

Leeds City Region will secure and exploit world-class digital infrastructure over the coming 20 years. With its partners in the private and public sectors the City-Region will drive up adoption of new technologies and invest in delivering digital services. Leeds City Region will maximise exploitation of the digital communication technology to boost its economic competitiveness, extend new opportunity and grow the City-Region’s economy.

Our Objectives

Priority 1: Competitive Digital Infrastructure

Leeds City Region will have world-class digital infrastructure at accessible prices for all its businesses and households. The City-Region will strive to have early access to the quickest and most durable technologies for each of its priority locations and user-groups. Our ambition is to make speeds of at least 100 Mbps available as standard across the Leeds City Region.

Priority 2: Digital Services by Default

Public sector agencies in the Leeds City Region will be at the vanguard of implementing new digital service delivery in order to drive up adoption, secure efficiency savings and extend opportunity.

Priority 3: Adoption for All

Leeds City Region will encourage all its businesses and residents to connect to superfast broadband and engage with the ever-expanding range of opportunities for economic growth and personal development.

Priority 4: Targeted Exploitation for Impact

Leeds City Region will support its priority sectors to maximise exploitation and value from superfast broadband to create concentrated competitive advantage and economic impact.

Delivering the Vision

Three local broadband plans will be responsible for the delivery of the objectives of the Digital Infrastructure Plan in their respective areas:

- **West Yorkshire.** The local broadband plan for West Yorkshire covers Bradford, Calderdale, Leeds, Kirklees and Wakefield.
- **South Yorkshire.** In the Leeds City Region, the South Yorkshire (Digital Region) broadband plan covers Barnsley and will be delivered in liaison with Barnsley Council.
- **York and North Yorkshire.** In the Leeds City Region, this local broadband plan covers York, Craven, Harrogate and Selby. NYNET is responsible for delivery in liaison with these councils.
2. Our Digital Landscape

Coverage

OFCOM data\(^1\) shows that a large proportion of premises are already well served by superfast broadband networks, however all districts in the city-region contain some areas without access to even the most basic speeds.

- In Leeds and Bradford, around 80% of premises are covered by the SFB networks of BT or other providers.
- Only 15% of premises in North Yorkshire are in areas with access to SFB.

Wakefield has the highest proportion of businesses without access to speeds of 2Mbps (20%).

In each local authority, at least 10% of premises do not have access to 2 Mbps.

Speed

The map below shows BDUK estimates of current line-speeds for the Leeds City Region. The faster speeds are naturally available in more urban areas closer to the core network infrastructure.

Average speed varies across the city region. Highest speeds are found in the urban areas of Leeds (7.9 Mbps) and Bradford (8.3 Mbps) and the slowest speeds in North Yorkshire (6.6 Mbps). However this is an incomplete picture as it hides significant variation within these areas.

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\(^1\) It has not been possible to present data individually for local authorities in North Yorkshire as OFCOM data does not provide a local authority level disaggregation for this area.
Adoption

Approximately 64% of premises in the city region have an ADSL broadband subscription. This is below the England average of 69%.

Adoption rates are highest in York (70%) and the County of North Yorkshire (68%) despite large areas of the county only having access to low bandwidth. Adoption rates are lowest in Barnsley at 59%.

There is very little reliable information on rates of adoption for business users. This is complicated as some businesses will use residential lines (for example, home businesses), while other businesses, particularly larger ones, will have multiple broadband lines. The most reliable estimate of adoption rates therefore comes from the Yorkshire and Humber ICT Business Survey which estimates that 71% of businesses use the internet and 65% have a broadband line. This is consistent with Point Topic data which estimates that 64% of businesses have a broadband line.

Future Roll Out

Figure 2-5 shows an assessment of likely Next Generation Access roll-out done for DCLG in 2010. Using a Red, Amber Green rating and a series of probability thresholds, this data shows a more detailed pattern of areas of need. Not surprisingly the more urban centres have been coloured Green underlining the likelihood that the market will provide for residents and businesses in these areas. There are however large expanses of Amber and Red where the costs of delivery are high and the customer base more sparse. It is these areas where the BDUK resource is most likely to be channelled, yet tackling all the White areas and meeting longer term demands will require substantial additional investment.
This process will identify the first tranche of public and private co-investment alongside the BDUK resource but the task of putting the entire Leeds City Region on the kind of ultra-fast digital infrastructure platform needed over the next 20 years will be a much larger undertaking.

Figure 2-5: Areas of Leeds City Region & West Yorkshire At Risk of Not Getting Superfast Broadband

![Map of areas at risk of not getting NGA](image)

Source: “An Assessment And Practical Guidance On NGA Risk” 2010, DCLG

Across the city-region as a whole, there are just under 93,000 businesses which will not have access to NGA by the end of 2012, representing around 62% of all businesses[^2]. Of these, over 28,000 are in priority economic sectors (see Section 3). The total figure also includes around 11,000 businesses which are located in enabled exchange areas but which may not be able to access NGA (around 16% of businesses in these areas) due to expected capacity limitations in the roll-out plan.

So far BT has announced that 54 of the 236 exchanges in LCR will receive NGA by 2012. The map in Figure 2-6 shows how patchy the coverage may ultimately be in some areas.

Figure 2-6: BT and Virgin Planned and Existing NGA Deployment, Sept 2011[^2]

![Map of NGA deployment](image)

Source: BDUK

[^2]: Business figures taken from the MINT database.
3. Why Digital Matters?

**Economic Backdrop**

LCR’s ten local authority districts together form a large and important economic area in the North of England. The city region has almost three million residents, 1.3 million jobs and more than 102,000 businesses. LCR makes a considerable contribution to the national economy, generating over £53 billion GVA annually (5% of the UK total) and makes an essential contribution to the Yorkshire and Humber economy, accounting for 57% of businesses in the region.

LCR’s distinctive mix of urban and rural areas has created a diverse economy. Leeds is the central economic hub, accounting for just under a third of LCR’s total jobs but Bradford, sub regional centres such as Barnsley, Halifax, Huddersfield, Wakefield, Harrogate and York, market towns and other service centres all play a vital role in LCR’s competitiveness.

**LCR has some important assets...**

LCR has performed well in terms of enterprise and private sector employment growth over recent years. Although growth has stalled in recent years (as it has elsewhere) the city region still has a strong base of socioeconomic assets on which to build.

1. **A Diverse Employment and Business Base**

LCR’s economic diversity has contributed to the city region having one of the most resilient economies in the North of England. The 2011 Leeds City Region Employment and Skills Strategy (2010) reported that LCR out-performs the national LEP average on most key indicators of economic strength.

**Figure 3-1: Overview of Economic Structure and Resilience in LCR**


LCR’s broad base of companies and sectors, its strong concentrations of employment in growing and knowledge intensive sectors and its comparative lack of reliance on declining sectors underpins its strong position.

2. **Well Established Sector Strengths**

The makeup of LCR’s employment base is broadly comparable with the national picture; wholesale and retail provides the largest proportion of employment, with health and social work, manufacturing and education following. Leeds itself is also the largest centre for financial and business services outside London. Unlike many economies in the North of England, LCR’s employment base is not overly dependent on public sector employment, although it remains an important source.

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3 Leeds City Region Employment and Skills Strategy (2010)

4 LCR Employment and Skills strategy

5 Ekosgen (2011) Index of Economic Resilience
The key sectors in LCR are outlined in Table 3.1.

### Table 3.1: Key Sectors in Leeds City Region highlighted by LEP analysis

<table>
<thead>
<tr>
<th>Sector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>Although LCR’s economy has shifted towards service sectors, manufacturing remains a large sector in the Leeds City Region. Almost 10,000 manufacturing businesses are located in LCR, providing more than 150,000 jobs. Manufacturing is most important in Calderdale, Selby and Kirklees, where it accounts for a fifth of employment.</td>
</tr>
<tr>
<td>Finance and Business Services</td>
<td>This is an important sector for LCR and one that looks set to be a major driver for growth in the future; an employment increase of 160% is projected for this sector by 2026. This sector offers particularly large inward investment potential with back office, customer service, HQ expertise already clustered in the area and it continues to offer a wage competitiveness advantage over the South East. Financial Services makes an important contribution to the employment base, providing almost 60,000 jobs in LCR.</td>
</tr>
<tr>
<td>Hospitality, Leisure, Travel and Tourism</td>
<td>Expected to be a high performing sector at the UK level and one where there is significant potential for employment growth in the LCR. As with elsewhere, LCR’s base of businesses in this sector is dominated by SMEs, there are more than 12,000 tourism businesses in the city region, employing 96,000 people.</td>
</tr>
<tr>
<td>Creative Content Industries</td>
<td>LCR has seen significant growth in this sector which now employs almost 50,000 people. As well as contributing significantly to employment, this sector underpins the success of other aspects of the LCR economy and provides an important source of new ideas and innovation to the economy more widely.</td>
</tr>
</tbody>
</table>

Note: Employment data cited in this table is sourced from BRES (2010). Business numbers have been derived from analysis of Mint and Fame databases.

Alongside these well-established sector strengths, LCR is home to some concentrations of activity in high value and growing industries that have potential to be developed into internationally competitive sectors. These strengths are explored later in this section.

### 3. Research Expertise and Innovation Assets

LCR’s eight HEIs (one of the largest groupings in Europe) underpin much of the city region’s economic strength. The Universities of Leeds and York are globally renowned and feature within the QES Top 100 world university rankings. There are more than 120,000 students enrolled at HEIs in LCR. Alongside this, LCR has a rich variety of innovation and R&D facilities and centres. There are 11 sector specific Centres of Industrial Collaboration (CICs), two of the FT’s world top 100 business schools, Science City York and other assets such as the Food and Environment Research Agency.

### 4. Concentrations of Highly Skilled Workers

The skills profile of LCR residents compares favourably to other northern city regions and there are concentrations of highly skilled workers in some parts of the City Region. This is reflected in the growing proportion of LCR employment in knowledge intensive businesses. Although the proportion in LCR (10%) still lags slightly behind the national average (11%), the gap is closing. LCR increased its proportion of workers in knowledge intensive businesses by one percentage point between 2000 and 2008 while the proportion remained stable nationally.

...but there are some big challenges ahead

LCR has a relatively strong track record in terms of its ability to generate jobs and maintain employment rates but there is evidence that the city region has not fully capitalised on its economic assets. LCR will need to strengthen its performance across a number of areas to

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6 Yorkshire Futures, 2009

7 HESA. Data for 2009/10 academic year.
ensure that the economy generates sufficient employment and wealth to support the projected increase in working age population.

This is, in part, related to the uneven performance amongst LCR’s local authorities. Employment growth since 1998 has been focused primarily on Leeds, Wakefield and, to a lesser extent, Harrogate. While these parts of the City Region enjoyed substantial job growth, there was only minimal growth in Barnsley and Calderdale in the same period. This has left some parts of the city region more dependent on public sector employment than others.

LCR needs to compete globally both in term of attracting FDI and having a business base that can trade internationally. Analysis underpinning the LEP plan indicates that there is scope to improve LCR’s performance in these areas. Although LCR has a strong presence of global HQs, the city region has not effectively managed to attract FDI in recent years. West Yorkshire was recently ranked 15th in the country for inward investment, behind Birmingham, Manchester and Tees Valley. LCR also lacks the international trade links commensurate with its assets. Even in sectors where LCR has niche strengths, the region lags behind UK competitors for its share of international trade.

There are a variety of interlocking factors at play here;

- **A widening gap in business density**: LCR’s current business density (352 businesses per 10,000 adults) lags significantly behind the national rate of 419 per 10,000. Although LCR’s business density has increased the gap with the national average is widening.

- **Comparatively high unemployment rate**: unemployment is growing above the national rate and is a particular challenge in Barnsley and Bradford. Employment rates in Craven, Harrogate and Selby on the other hand are strong.

- **Poor skills profile in some local authorities**: the LCR skills profile does not compare well to the national average. Concentrations of people without qualifications are greatest in Bradford and Barnsley while other parts of the CR (Selby and York in particular) do much better.

- **Below national average rates of productivity**: although LCR performs better than the YH average in terms of GVA per head (£17.6k), it falls short of the national figure (£20k).

- **Room for improvement in innovation performance**: although LCR has improved on many key innovation indicators, performance overall still lags behind the national average with levels of R&D investment unchanged since 2002.

The latest forecasts from Yorkshire Forward’s Regional Econometric Model (published in March 2011) predict output growth of 2% for LCR in 2011 and 1.7% in 2012, in line with growth for Yorkshire & Humber as a whole. These projections are now very optimistic in light of the performance of the national economy. Growth in output is likely to be patchy and not expected to drive rapid job creation.

As the recovery does kick in, like other areas, LCR has to respond to the challenge of decoupling carbon emissions from economic growth. This is a key priority for the LEP.

...and some big opportunities to capitalise on

LEP priorities are aligned closely towards building on LCR’s strengths, addressing the area’s challenges and making the most of opportunities. LCR is home to concentrations in high value and growing industries that have potential to be developed into internationally competitive sectors.
Table 3.2: Key Sectors in Leeds City Region

<table>
<thead>
<tr>
<th>Sector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Sciences, Biosciences and Medical Technologies</td>
<td>Significant cluster of activities in medical technologies across the north and west of the city region, a centre of excellence in regenerative medicine centred in Leeds but extending across the city region and significant biosciences expertise centred on York.</td>
</tr>
<tr>
<td>Digital Technologies</td>
<td>Particularly tele-health and IT, extending from the cluster of strengths in the Airedale Corridor and wider industrial base in digital and media technologies in the west of the city region, through to the hubs of digital expertise and enterprise in Leeds, Huddersfield and York.</td>
</tr>
<tr>
<td>Low Carbon Industries</td>
<td>Particularly environmental technologies and biorenewables. A centre of excellence for biorenewables is currently being developed around York, a growing supply chain of manufacturing to support renewable energy technologies in and around Kirklees and the west of the city region, and the energy industrial base in Selby and Wakefield.</td>
</tr>
</tbody>
</table>

There is a solid base of activities on which to build here; LCR has a strong creative content sector and Bradford has been named the world’s first UNESCO City of Film.

How Digital is Changing Our World

There is a clear role for superfast broadband to help address LCR’s priorities and capitalise on emerging opportunities. There is significant scope for NGA to slow down or arrest the disparities in performance in LCR on some key indicators.

Helping to address the productivity gap...

NGA can make productivity enhancing technologies more widely available and be instrumental in ensuring their increased uptake and more effective application to businesses.

Table 3.3: Key NGA enabled Technologies for Increasing Productivity

<table>
<thead>
<tr>
<th>Technology</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloud Computing</td>
<td>Internet based technology through which information is stored on servers provided on a pay as you go basis. Dependent on a reliable, fast and symmetrical connection. Increased uptake of CC will be enabled by NGA and have a marked impact on the cost structure and production possibilities of all firms, especially SMEs.</td>
</tr>
<tr>
<td>Video Conferencing</td>
<td>SFB will broaden the availability and reach of high definition, real time video conferencing. Potential to have a marked effect on the need for face to face engagement, reducing business trips, saving time and money and supporting greater levels of labour productivity.</td>
</tr>
<tr>
<td>Voice Over Internet Protocol (VOIP)</td>
<td>Allows businesses to run their telecommunications over the data network, offering considerable cost savings. VoIP already runs over ASDL lines but SFB will considerably increase the capacity of the system and make it more attractive to businesses. The industry estimates that businesses cut their telecommunications costs by about 30% when they switch to VoIP.</td>
</tr>
<tr>
<td>Synchronous Speeds</td>
<td>Improved upload speeds will increase security and reliability of data back-ups and there will be significant cost reductions associated with sharing and distributing data or new content.</td>
</tr>
</tbody>
</table>

Increased use of these NGA enabled technologies could precipitate more widespread adoption of flexible and remote working practices. There is a strong bank of evidence to suggest that this will have a marked impact on productivity. For example, a study carried out by BT found that productivity increased by 20% where remote working was adopted.

Manufacturers and retailers will be able to use NGA to improve
productivity by using digital technology to manage supply chains more effectively. This technology also presents opportunities for businesses to secure new supply chain opportunities from organisations which have implemented e-procurement systems.

Achieving synchronous speeds (i.e. fast upload and download speeds) will be critical to realising many of the benefits of digital technologies. For example, adoption of flexible working practices is as dependent on fast upload speeds (so that completed work can be sent) as it is on fast download speeds. Similarly, successful adoption of many tele-health technologies relies on quick upload and download of data.

Increasing popularity of smart phones and other devices that use mobile and wireless internet connections has stimulated a surge in demand for wireless internet access. The increasing level of sophistication of mobile internet devices and applications is likely to mean that the need for more widely available and higher quality wireless networks will intensify.

...and improve LCR’s inward investment offer

There is potential for NGA to make the LCR a more attractive location for inward investment from firms previously deterred by low speed or poor access. This is particularly important for digital and creative industries, which have become the largest and fastest growing source of inward investment in the UK. Research by Ernst and Young found that telecommunications and technology infrastructure was the single most important factor in attracting Foreign Direct Investment; cited as important or very important by 89% of businesses. Failure to invest in SFB could mean the city region misses out and allows other areas to gain a competitive advantage.

Increasing business start up rates...

SFB makes it easier and less costly to start a new business: SFB will lead to higher levels of business creation in much the same way as broadband has in the past. Cloud computing is a central mechanism here; NGA will provide adequate speeds to allow entrepreneurs to rent computing power and storage and pay on demand for the services they use. This reduces the fixed costs of starting up, and allows businesses to more easily vary their scale of operations. Other NGA enabled technologies such as Voice over Internet Protocol (VoIP) play an important role in reducing some of the costs that can act as obstacles to business start up.

...and supporting growth in key sectors

There is significant potential for NGA to support growth in key sectors in LCR. There is clearly potential for enhanced broadband speeds to support growth in the digital and creative content technologies sectors.

### Table 3.4: Number of Businesses and Employment in Priority Sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>No. Businesses</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Businesses</td>
<td>150,350</td>
<td>2,606,000</td>
</tr>
<tr>
<td>Priority Sectors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tourism and Leisure</td>
<td>12,250</td>
<td>96,300</td>
</tr>
<tr>
<td>Creative and Cultural</td>
<td>6,800</td>
<td>48,600</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>9,800</td>
<td>151,300</td>
</tr>
<tr>
<td>Digital</td>
<td>5,950</td>
<td>35,600</td>
</tr>
<tr>
<td>Low Carbon</td>
<td>3,300</td>
<td>6,050</td>
</tr>
<tr>
<td>Financial Services</td>
<td>2,600</td>
<td>59,500</td>
</tr>
<tr>
<td>Life Sciences</td>
<td>300</td>
<td>6,100</td>
</tr>
</tbody>
</table>

Source: Number of businesses from Mint and Fame databases. Employment data from BRES (2010). Coverage of employment information within the Mint and Fame databases is insufficient to generate a robust estimate. Methodological differences between these sources means that the two are not strictly comparable, so this analysis should be treated as indicative.

Analysis of the Mint and FAME databases highlights the scale of opportunity in digitally dependent growth sectors. These datasets suggest there are circa 150,000 businesses currently trading in the
Leeds City Region\textsuperscript{11}. Of these, just under 36,000 are trading in LCR’s priority sectors (supporting circa 370,000 jobs).

NGA is expected to stimulate significant growth in tele-health and tele-medicine technologies. Aside from the clear impact on public sector service delivery (for example by enabling home monitoring and treatment and remote consultations thereby reducing visits to hospitals and GP surgeries) there is scope for LCR to become a leading location for this emerging sector.

The city region’s existing strengths in medical and digital technologies, large bank of innovation assets alongside the emerging track record in developing telemedicine approaches (e.g. in Airedale NHS trust) should put LCR in a strong position to benefit from this growing market.

**Boosting innovation and knowledge transfer...**

In those sectors reliant on the exchange of information and data, higher bandwidth will also allow businesses to take advantage of faster upload speeds and new channels for distributing digital content. In addition, the potential for co-production between businesses in different stages of the supply chain will be enhanced through collaborative applications becoming more widely available.

**Providing opportunities for online learning...**

Rates of online learning have risen sharply as internet speeds have increased\textsuperscript{12}. Students appreciate the flexibility that online learning offers and the enhanced learning experience that higher speed provide.

Online degree level learning is likely to be significantly enhanced by SFB due to higher bandwidth requirements for degree level learning which means that there is potentially a greater requirement for interaction and collaboration. There is also potential to improve school and work based learning.

**Improving access to employment for excluded groups**

In addition to making it easier for people to search and apply for jobs online, SFB can improve the accessibility of employment opportunities for groups facing particular barriers, such as disabled people and lone parents. Opportunities to work from home have risen as broadband speeds have increased. A survey by the CBI showed that the number of employers offering tele-working rose from 14% in 2006 to 46% in 2008.

While tele-working used to be most common amongst higher skilled and the self employed, faster broadband is increasing the range of occupations which can be carried out at home. For instance, contact centre work could be done using higher quality VoIP and cloud computing.

**Enhancing public sector service delivery...**

The Comprehensive Area Assessment exercise in 2009 rated 40% of LCR LAs as performing well or excellently compared to 56% nationally. Improving service delivery is therefore a clear priority for LCR. There is scope for NGA to have a significant impact on the way that public services are delivered. Greater bandwidth, availability and adoption of broadband will enable councils to offer more services online and develop new and innovative ways of communicating with and providing services to their residents.

**A variety of environmental benefits...**

Higher bandwidth will create more opportunities for people to work...
from home which in turn may have a marked effect on the number of commuting trips and potentially reducing carbon emissions and travel costs for employees.

Growth in e-commerce could reduce the number of shopping trips made by car and enable further energy savings.

SFB could also generate other environmental benefits which have not been quantified here. These include:

- **Supply Chain Management**: reducing inventories and associated holding costs using broadband technologies which decreases the amount and size of storage facilities needed and associated transportation costs. A report by the American Consumer Institute found that transport costs were reduced by 20% when companies used web based transportation management systems. SFB can also open up untapped opportunities for supply chain collaboration.

- **Smart Meters**: enable households to have greater control of their energy consumption by relaying information remotely. Although current smart meters do not require particularly high bandwidth, future generations could feed in to smart grids which control energy supply and lead to much greater reductions in CO2.
4. Our Strategic Priorities to 2030

Priority 1: Competitive Digital Infrastructure

Objective
“Leeds City Region will have world-class digital infrastructure at accessible prices for all its businesses and households. The City-Region will strive to have early access to the quickest and most durable technologies for each of its priority locations and user-groups.”

Rationale
High-speed digital infrastructure provides a platform for economic competitiveness, enterprise and growth. It can sustain new models of service delivery and open out opportunity to disadvantaged groups. Competitor city-regions across the UK and globally are gaining access to faster broadband and committing to long-term programmes of investment. Leeds City Region needs to be at the forefront of infrastructure developments to maintain its competitive offer.

Priorities
LCR will prioritise its efforts and has made choices about the target goals for each priority location. The Digital Infrastructure Plan has segmented Leeds City Region into target location types:

- **Commercial Centres**: the regional cities of Bradford and Leeds, and York, plus sub-regional centres Barnsley, Harrogate, Halifax, Huddersfield and Wakefield which are home to high concentrations of businesses.

- **Priority Sites**: other priority locations sitting outside the traditional city-centre locations, taking in
  - the city region’s **science parks** including the Digital Media Centre in Barnsley, York Science Park and Leeds Innovation Centre
  - **business and industrial parks** for example Leeds Valley Business Park and Langthwaite Business Park in Wakefield
  - **major strategic sites**, the highest profile of these being the LCR Enterprise Zone in the Aire Valley Leeds which will provide a catalyst for growth across the city region. Other major strategic sites in the area include for example, the Heslington East site in York
  - **key sector hotspots**, areas with concentrations of businesses in priority sectors that are not picked up by other elements of the framework will be specifically targeted here. For example this would include areas where financial services activities are concentrated in Leeds or clusters of advanced manufacturing activities in Craven.
Leeds City-Region Digital Infrastructure Plan

- **Core Areas**: the large mass of residential and other urban centres and rural areas, made up of the final third and the 10% hardest to reach locations.

- **Future Developments**: new property developments should be future-proofed for immediate access to next generation digital technology for both residential and business users. As a key strategic development, the Enterprise Zone at Aire Valley has been highlighted within this group.

Although we are ambitious, we are also realistic about what can be achieved. A strategic approach to securing the best digital infrastructure is required which recognises the market realities and complements the investment plans of public and private sector investors.

We are committed to ensuring residents and businesses have access to competitive broadband speeds over the next 20 years. Our framework distinguishes between

- core speeds largely provided by fixed technology and
- mobile connectivity providing a complementary overlay to the core fixed infrastructure.

We expect wireless to be the core technology connecting some of our more remote areas where it can provide access at our target speeds.

We aspire for our businesses and residents to have the option of using fast mobile connectivity when on the move and more resilient fixed connections back at base. This strategy aligns the strategic objectives of BDUK and Europe 2020. LCR’s infrastructure ambitions can be set out as a series of target milestones for connectivity.

Synchronicity is equally as important as speed of connection; the aspirations we have set out apply equally to upload and download speeds.

<table>
<thead>
<tr>
<th>Table 4.1: Framework for Infrastructure Development Milestones</th>
</tr>
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<tbody>
<tr>
<td>Speed / Technology</td>
</tr>
<tr>
<td>Commercial Centres</td>
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<tr>
<td>Sub-Regional Centres</td>
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<td>Priority Sites</td>
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<tr>
<td>Core Areas</td>
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<tr>
<td>Future Developments</td>
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A mix of approaches will be required to realise our ambitions over the next 20 years, not all of which require direct public sector intervention. The market can be expected to invest in the more viable locations and be encouraged to align future investment plans with the City-Region’s own growth aspirations for key locations and sectors.

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13 Where the current round of BDUK investment is focussed

14 Our aspiration for fixed and mobile does not prejudice any solutions which the market and new technologies may come forward

15 2Mb for all and 24Mb for 90% by 2015. NB we are aiming for 30Mb not 24Mb to align with EU Agenda 2020

16 30Mb for all and 100Mb for 50% by 2020

17 Includes York
Leeds City-Region Digital Infrastructure Plan

Targets marked in:

- **Red** are those which the government has committed to realising through BDUK and Super Connected Cities.
- **Green** are where the market can be expected to deliver. Leadership and facilitation may still be required to animate and channel market investment in the required order.
- **Brown** are expected to require further direct public investment in the medium term. Alongside direct investment the public sector may need to generate innovate market led solutions backed by public support.
- **Black** are locations where some facilitation might be required to channel market investment but which have not been designated as high priority targets within the Digital Infrastructure Plan.

Leeds boasts the IX Leeds Internet Exchange and ISP network which is a valuable asset to the city region. The expertise from this network will be used in developing these proposals and taking forward activity related to digital infrastructure and help to ensure businesses across Leeds and Bradford are not overly reliant on networks and infrastructure in London.

**Action Areas**

**Existing:** the Leeds City-Region already has widespread access to 2Mb delivered by ADSL and the BT Infinity Rollout will see large numbers of households in the more urban areas acquire 30Mb speeds. Virgin Media also has extensive coverage of residential areas offering its 20-50Mb service. The market is also already providing access to high speed 100Mb services to City Centres, Science Parks and HEIs.

**Pipeline:** West Yorkshire has an allocation of £6.34M from BDUK to provide superfast broadband to at least 90% of the premises in the five districts. York, Harrogate, Selby and Craven are participating in the Connecting North Yorkshire initiative to secure investment from the BDUK allocation to North Yorks. Barnsley is already beginning to benefit from the Digital Region programme which will provide superfast to all households and businesses in the district alongside the rest of South Yorks. More localised schemes are being developed across the City-Region which includes plans for Fibre To The Premise (FTTP) to all premises inside York’s inner ring road. York is also currently piloting a free wireless service within part of its City Centre, with plans to expand the project over the next 12 months.

**Future:** partners will need to commit to tranches of future action to realise their ambitions:

- **Market Engagement:** building relationships with the key market operators and investors to ensure their plans are informed by and aligned with the Leeds City-Region’s own priorities and growth ambitions.
- **Setting Standards:** helping ensure that planning consents required for future facing infrastructure can be put in place and that planning authorities support network operators building priority networks.
- **New Investment Models:** adopting and developing new models for investment in infrastructure alongside market investors and operators to ensure LCR is at the forefront of new solutions from the City and Europe.
- **Direct Support:** where market failure persists and private solutions remain unviable, partners will work to unlock direct investment in broadband schemes which align closely with our targets. After the initial BDUK investment, the focus of these interventions is likely to be concentrated on ultrafast 100Mb solutions in priority locations for economic growth.
**Priority 2: Digital Services by Default**

**Objective**

“Public sector agencies in the Leeds City Region will be at the vanguard of implementing new digital service delivery in order to drive up adoption, secure efficiency savings and extend opportunity.”

**Rationale**

The market for digital services can broadly be divided into:

- **Globally Competitive Services**: which are not dependent on location and are available to anyone with an adequate broadband connection. This includes Cloud Services such as MS Office 365 and Google Docs, applications for customer relationship and supply chain management and the huge market for media services such as i-Player, Netflix, Spotify and the soon to be launched YouView service.

- **Public Services**: which are commissioned locally by public sector agencies to deliver health, education, welfare, emergency services and public transportation systems.

The Leeds City Region cannot expect to influence the global competitive market for services but it can commit its partners to delivering the most advanced suite of digitally driven public services. The commitment of public sector partners to delivering services using digital technology will help drive up adoption and attract interest from investors in implementing next generation technologies and services.

**Priority**

Public sector agencies across Leeds City Region are committed to securing world-class exemplar provision of:

- Tele-Health Services
- On-Line Interactive Education & Learning
- Smart Transport Systems.

Tele-health and e-education and e-learning projects are proposed to be piloted in the Super Connected Cities Priority Zone within Leeds and Bradford.

Further down the line, additional opportunities are expected to emerge for digital provision of:

- Advice & Welfare Provision
- Engagement & Democratic Services.

In parallel to the public service agenda the Leeds City Region LEP will explore scope for the Digital and Creative sector to position itself in the supply chain for the global market for digital service. A sector based strategy for these sectors should align with the priorities in this Digital Infrastructure Plan.

**Action Areas**

**Tele-health Services**: Airedale NHS Trust is very active in developing and extending the use of tele-health and telemedicine. The recent opening of the Tele-health Hub at Airedale Hospital (October 2011) further strengthens the position of LCR in this important and growing digital service area. To build on this commitment, partners will need to commit to interventions to help extend the provision and, critically, uptake of telemedicine services across the Leeds City Region.
**On-Line Interactive Education & Learning:** digital and online learning tools have become increasingly integrated into the delivery of the curriculum in schools. A number of LCR’s authorities are members of the Yorkshire and Humber Grid for Learning Consortia, which is aiming to become a centre of excellence and innovation for e-learning. Partners will strive to continue to extend the quality and availability of online interactive education and learning tools in schools as well as to adult learners. Alongside this, the availability of new technologies such as the Raspberry Pi is enabling advanced digital skills such as programming to receive increasing prominence within the school curriculum.

**Smart Transport Systems:** we are focused on using a range of technologies to develop and implement world-class traffic management and information systems across the city region. Intelligent Transport Systems to manage traffic flows are operational in Bradford, Calderdale, Kirklees, Leeds and Wakefield. In Leeds City Centre, a Strategic Traffic Management System is also in place to control signals on priority bus routes. Partners will continue to deploy Intelligent Transport System technologies to manage congestion and parking and provide real-time traffic and travel information to the public. We will also seek to develop links between local systems and share data and intelligence amongst partners.

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**Priority 3: Adoption for All**

**Objective**

“Leeds City Region will encourage all its businesses and residents to connect to superfast broadband and engage with the ever-expanding range of opportunities for economic growth and personal development.”

**Rationale**

Although adoption levels for current broadband are high overall there remain important groups of end-users who are not signing up. As faster broadband services are rolled-out there is scope for a second digital divide to emerge and for important groups to be left even further behind. As the range of services running on these faster technologies grows, it will be important to ensure groups of businesses and residents are not missing out.

**Focus**

The adoption agenda is relevant to all the businesses and residents in the Leeds City Region. We are determined to maximise adoption of superfast broadband technologies and to ensure no-one is left behind.

We recognise however that it will be important to focus our attention on certain priority groups of end-users.

**Businesses Adopters**

Businesses will adopt broadband where they can see a real commercial advantage. They will invest in higher speed connections where the case is clear and will continue to re-invest where they can make a return.
Businesses go through a series of stages on the way to implementing new technologies, starting with basic awareness (1) of the existence of a helping technology, before forming an appreciation of its potential (2) to change their business. There will then be a process of assessing the options and value of the additional investment in order to establish the business case (3), before proceeding to procure a solution (4). Once in place, businesses will need to review whether they are maximising the returns on their investment and explore new ways in which to get more from their investment (5).

### From Awareness Raising to Exploitation: The Adoption Process

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Basic Awareness</td>
<td>Start with awareness of the existence of a helping technology.</td>
</tr>
<tr>
<td>2. Appreciate Potential</td>
<td>Form an appreciation of its potential to change their business.</td>
</tr>
<tr>
<td>3. Value &amp; Make The Case</td>
<td>Assess the options and value of the additional investment.</td>
</tr>
<tr>
<td>4. Invest &amp; Procure</td>
<td>Establish the business case and proceed to procure a solution.</td>
</tr>
<tr>
<td>5. Implement &amp; Maximise Returns</td>
<td>Review the returns on investment and explore new ways to get more from their investment.</td>
</tr>
</tbody>
</table>

The Leeds City Region is committed to a major adoption strategy for all its businesses and there is evidence that some businesses may need targeted encouragement to articulate their needs into overt demand for faster connectivity.

Survey research underpinning an ICT Benchmarking Study for the Yorkshire and Humber region explored the type of businesses that tend to have low levels of adoption and highlights the following:

- **Levels of adoption are lowest amongst very small businesses:** 26% of businesses employing fewer than 10 people are classified as non-adopters and a further 26% as having only basic levels of adoption.

- **But levels of exploitation are also low in medium sized businesses:** around a third of businesses employing 11 to 250 people had just basic levels of ICT adoption, so there is scope to impact on business performance by enhancing how these businesses use ICT.

- **Adoption and Exploitation vary amongst and between sectors:** some sectors (tourism and food and drink in particular) stand out as having very low levels of adoption and exploitation which suggests that there may be a case for targeted intervention in some sectors.

We will prioritise SMEs by focusing on those in the middle ground caught between being sufficiently serviced by their current broadband and those at the other end of the spectrum who can meet their needs adequately with existing services.

This means focusing our adoption efforts most intensively on two groups of businesses:

- **Essential Adopters:** businesses for whom ICT and broadband are increasingly essential as a core requirement for market entry.

---

18 Yorkshire Forward (2010) ICT Benchmarking Study in the Yorkshire and Humber Region.
- **Competitive Edgers**: businesses in sectors where access to faster broadband and the ICT services which run on it, can generate real competitive advantage.

There are some 10,000 Essential Adopters in the Leeds City Region and a further 45,000 Competitive Edgers that will be the priority focus of adoption efforts.

The business adoption agenda will reach out to **Adequately Served** businesses as an intermediate term priority. As new connection technology becomes available, these businesses need to ensure they do not fall behind the competition and are ready to sign up for faster broadband when the case can be made.

Support for adoption needs to align with the grain of business decision-making processes and integrate with our exploitation ambitions. Lessons upon which the service will be designed are set out below:

- promotion needs to focus on concrete benefits, actual costs and realistic targets
- technical issues can be difficult for small businesses to grasp
- smaller businesses can now think big and make use of e-business solutions
- the best way to reach SMEs is through existing networks and resources, including umbrella business organisations and use of local authority Key Account Managers
- investing in ICT training is critical.

### Residential Users

The adoption agenda will drive up adoption at home to ensure critical groups of people living in the Leeds City Region are able to take advantage of the important services and opportunities which faster broadband speeds will make available. Our attention will be most acutely focussed on groups where adoption tends to be lowest and where the potential to benefit from superfast broadband is most immediate.

Usage of the internet tends to be least widespread amongst the elderly and people in lower income groups. Although as **Figure 4-1** show, lower levels of adoption are also prevalent amongst people with disabilities.

**Figure 4-1: Internet Usage, 2011**

Source: ONS Internet Access Quarterly update (Q3 2011)
The potential gains from adopting internet use at home are more immediate and tangible for some groups than others. For example, unemployed people may be able to secure immediate benefit by searching and applying for jobs online. Conversely, the benefits to elderly people may be less immediately evident, although evidence suggests that the impacts on health and wellbeing and independence that elderly people can realise via digital technology (e.g. by shopping and paying bills online or accessing tele-health services) is equally important.

We have identified a small number of priority groups on which to focus our initial activities around residential adoption. The aim of the selection of these groups is to ensure that services focus on driving up adoption amongst groups that tend to have lower levels of adoption and where the potential gains are significant.

Evidence suggests that the main factors driving low rates of adoption of ICT and broadband enabled technologies are:

- **Income and employment**: a number of studies\(^{19}\) point towards lack of affordable routine access to ICT amongst the factors leading to low rates of adoption. This is linked to difficulties purchasing equipment as well as covering telephone and internet subscription costs.

- **Health and disability**: technology can greatly assist people with long-term illness and disabilities but can be difficult and costly to access for people often on low incomes especially where they require adaptation.

- **Age**: use of ICT and broadband enabled technologies is growing amongst older people, but skills and awareness limitations can mean the real potential is not being fully exploited.

People on lower incomes, the unemployed, unwell and elderly are expected to have lower rates of superfast broadband adoption despite significant potential benefits being available. Our full set of priority groups is highlighted in Table 4.2.

<table>
<thead>
<tr>
<th>Table 4.2: High Priority Residential Adoption Groups</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low Adoption</td>
</tr>
<tr>
<td>Lower Income</td>
</tr>
<tr>
<td>Unemployed</td>
</tr>
<tr>
<td>Unwell</td>
</tr>
<tr>
<td>Elderly</td>
</tr>
<tr>
<td>Young Families</td>
</tr>
<tr>
<td>Learners</td>
</tr>
</tbody>
</table>

Our efforts to drive up adoption of superfast broadband will align closely with the innovative work undertaken by Race Online. Their approach highlights\(^{20}\) a series of compelling benefits of getting on-line:

- stay in touch
- save time, money and hassle
- explore interests
- find information
- learn more
- be entertained
- find a job

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\(^{19}\)See for example, Cullen (2001) *Addressing the Digital Divide, Online Information Review* or Hoffman and Novak (1999) *Diversity on the Internet: the relationship of race to access and usage*

**Action Areas**

Actions to boost adoption need to proceed along four channels:

- **Service Provider Marketing**: the commercial and public sector providers of broadband based services will market their offer to potential clients in order to generate business. The Leeds City Region should ensure any investments in infrastructure are accompanied with strong and wide-reaching proposals by commercial partners to drive up adoption rates in all communities of LCR.

- **Adoption For All**: LCR partners should consider a more widely cast campaign of promotion across the City-Region to raise awareness of superfast broadband generally, making the most of existing national initiatives.

- **Priority Business Marketing**: marrying up existing business membership organisations across the City-Region with the main service providers for targeted promotion of the faster broadband services.

- **Priority Resident Marketing**: marrying up support agencies which work with priority groups of end-user to ensure targeted marketing of the faster broadband services.

**Priority 4: Targeted Exploitation for Impact**

**Objective**

“Leeds City Region will support its priority sectors to maximise exploitation and value from superfast broadband to create concentrated competitive advantage and economic impact.”

**Rationale**

To ensure maximum value from the City-Region’s commitment to superfast broadband, attention will channelled into ensuring priority sectors are taking full advantage of business services and exploiting innovation potential. When combined with the new array of business services, superfast broadband can offer real potential advantage to reduce costs, expand market reach, adopt new forms of business operation, implement more effective management of supply chains and more responsive deployment of resources. In this fast-paced arena it is hard for small businesses to keep pace with the challenges and opportunities they face. If LCR is to grow its priority sectors it must ensure they have the intelligence and support they need to make informed investments and deploy new business models and approaches effectively.

**Focus**

Partners will focus their headline efforts on maximising exploitation of SFB among its existing priority sectors. To ensure support is well aligned with the real opportunities confronting businesses, the sectors need to be more narrowly prioritised. Our focus will be on sub-sectors which:

- have a significant economic foot-print
- are capable of growing through better use of superfast broadband
and can contribute to the City-Region’s economic objectives.

The table overleaf provides a prioritisation of the sub-sectors.

**Action Areas**

A tailored series of business support programmes for each sector and sub-sector to:

- raise awareness of the digital agenda and the competitive opportunities and threats facing your sector
- boost inter-firm collaboration and peer support to ensure clusters of businesses are sharing insights and developing joint innovation and product development initiatives
- provide digital mentoring to key businesses with real growth potential
- provide intensive business support for businesses with strong growth potential.

**Business Support Services**

The type of interventions needed to stimulate demand extends beyond awareness raising activities and will encompass other types of support needed to guide businesses through the adoption process and to ensure that the commercial case for adopting broadband and broadband enabled technologies is clearly made. [Table 4.3](#) provides a brief overview of the types of support that could potentially be required to stimulate and support broadband adoption amongst businesses.
Table 4.3: Sector Prioritisation

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</tr>
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<td>Financial Services</td>
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</tr>
<tr>
<td>Manufacturing</td>
<td></td>
<td>MEDIUM</td>
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<td></td>
<td></td>
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<tr>
<td>Advanced</td>
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<tr>
<td>Creative and Cultural Total</td>
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<td>Creative and Cultural Total</td>
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<td>MEDIUM</td>
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<tr>
<td>Tourism/Leisure</td>
<td></td>
<td>LOW</td>
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<tr>
<td>Tourism and Leisure Total</td>
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<tr>
<td>Hotels and Restaurants</td>
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</tbody>
</table>

Source: Total employment figures from Business Register and Employment Survey (ONS, Nomis) 2010.
### Table 4.4: Potential Business Support Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Awareness Raising</strong></td>
<td>A variety of approaches to inform and advise businesses of the availability of current and next generation broadband and the potential business applications and benefits. Activities could encompass direct marketing and advertising, events, workshops etc.</td>
</tr>
<tr>
<td><strong>Assistance to understand potential business benefits</strong></td>
<td>Depending on how far along the ICT adoption process a business is, or how well developed the strategic management side of the business is, some firms might require more assistance than other to visualise and understand the potential business benefits in the context of their own organisation. Activities in this group could be provided on a one-to-one or one-to-many basis.</td>
</tr>
<tr>
<td><strong>Support to plan and manage the change process</strong></td>
<td>Where adopting broadband will require or enable a wide ranging change in business operations (for example in businesses that have previously had no broadband or internet connection, or where broadband would enable online trading or supply chain management for the first time), additional support to manage the operational side of the change process within the organisation might be required. Activities of this type are likely to be the most intensive.</td>
</tr>
<tr>
<td><strong>Technical Assistance</strong></td>
<td>Support to get connections up and running and trouble shoot at the early stages is essential to ensure that businesses make the most of their connection.</td>
</tr>
<tr>
<td><strong>Staff Training</strong></td>
<td>This is an essential element for businesses that have not previously been used to online activities or applications. Skills development workshops or online resources will help businesses to extract maximum benefits from their connection.</td>
</tr>
</tbody>
</table>

We will develop services that are informed by best practice in broadband and ICT adoption activities. The services will be informed by the following key principles:

- target activities towards high impact businesses
- adopt a proactive approach with outreach, marking and PR at the centre
- make a clear and compelling commercial case for broadband
- encourage businesses to think big to boost the potential impacts
- link broadband support to wider business support delivery
- provide an appropriate intensity and mix of support according to the baseline level of ICT adoption and knowledge in the company.
5. Planning Considerations

Due to the economic, social and environmental importance of enhancing digital infrastructure and broadband coverage, steps have already been taken to ensure that local planning policy and decision making takes into account the priorities of this Digital Infrastructure Plan. We will ensure that planning and Highways departments in all of LCR’s authorities are well linked with the programme so that they have early sight of all roll-out plans. In addition, we will seek to coordinate planning guidance and street works across authorities to manage the rollout efficiently across Local Authority borders.

Whilst this project should be manageable for Planning and Highways departments with existing resources there may be some increase in activity levels that may need to be managed. We will take a proactive approach to this management to minimise suppliers’ perceived risks (and so possibly the cost of rolling out the network) and minimise disruption to the public and others working in the same time period.

In addition, we will take the following measures to address practical planning and highways issues which may arise in delivering the aims of the DIP:

- seek to ensure that through both the planning policy and development management processes that fibre to all premises (homes, commercial retail) is included in planning applications or that at least ducting is put in as part of all new developments as a minimum.
- ensure that any planning issues are considered and built into proposals within York, North Yorkshire and Barnsley. Planning issues have already been built into the West Yorkshire Local Broadband Plan and Super Connected Cities proposals.
- prepare the Planning Performance Agreement (positive fast-track planning agreement) being developed for the Leeds and Bradford Super Connected Cities Programme and consider the roll out of the principles elsewhere in the city region.
- explore the possibility of developing a fast-track planning approach for any additional street furniture or additional structures on schools or public buildings.
- consider the implications of new infrastructure on environmental quality and amenity, particularly in high quality environments such as Conservation Areas.

Making the Most of Public Sector Assets

Wherever possible we will make use of existing public sector assets and resources to deliver the Digital Infrastructure Plan and improve the digital connectivity of the Leeds City Region.

As part of the procurement of a digital infrastructure provider (or providers), we will ensure that details of all relevant public sector assets that may be used in the rollout of the network (e.g. as sites to house for wireless internet equipment) are made available to bidders.