South Derbyshire District Council

Overview and Scrutiny

REVIEW OF BROADBAND IN SOUTH DERBYSHIRE

South Derbyshire Changing for the better

South Derbyshire
District Council

1.0 Recommendations

1.1 That the Committee notes the ongoing work carried out in trying to improve the broadband infrastructure across South Derbyshire.

1.2 That the Council continues to raise the profile of South Derbyshire, within BT / Openreach and other relevant organisations, in relation to the poor broadband service that is available in many parts of the District.

1.3 That the Council writes to the relevant Government Ministers informing them that the poor broadband service available in many parts of the District is holding back many businesses and individuals. This will include participating in the Department for Business Innovation and Skills broadband consultation on proposals for a Next Generation fund.

1.4 That the Council investigates other methods of external funding for broadband infrastructure improvements. This would include working with other Councils across Derbyshire and the East Midlands to endeavour to improve the broadband infrastructure in the area.

1.5 That the Council puts together a fact-sheet to assist people in trying to improve their broadband speeds.

2.0 Purpose of Report

2.1 To advise Members of the ongoing work carried out on the review of broadband in South Derbyshire.

2.2 The report summarises the discussions and subsequent conclusions following the presentation given by BT / Openreach on the 9th December 2009.

3.0 Detail

Background

3.1 In 2008 the Overview and Scrutiny Committee carried out a review in relation to the broadband infrastructure in South Derbyshire.

3.2 The reports to the Overview and Scrutiny Committee on the 7th May 2008, 25th June 2008, 17th September 2008 detail the findings and outcomes of the 2008 review.

3.3 Tom Hamilton the BT Regional Sales Manager for the East Midlands gave a presentation in May 2008 defining BT's future plans for the broadband infrastructure across South Derbyshire.

3.4 In summary the review of broadband in 2008 in South Derbyshire achieved the following:
  - Raised the profile of South Derbyshire within BT relating to the Customers view that the broadband service in the area is poor.
  - The number of case studies/comments clearly demonstrated to BT that a problem exists in South Derbyshire. The number was sufficient to get BT to review the exchanges and line plant in our area, although no issues were found.
  - Potentially moved the exchanges serving South Derbyshire higher up the priority list for upgrade to fibre.
  - Enabled South Derbyshire residents, who raised case studies/comments, to discuss their individual problems, with Tom Hamilton the Regional Sales Manager for the East Midlands.

3.5 Paul Bimson from BT (the Regional Partnership Director for the East Midlands) and Carl Gange (from Openreach) gave a presentation, on the 9th December 2009, on the current situation and the future plans for broadband in South Derbyshire.

3.6 The report to the Overview and Scrutiny Committee on the 9th December 2009 sets out the questions that BT and Openreach were requested to answer in their presentation.

3.7 A copy of the presentation from the 9th December 2009 is at Appendix A.

Conclusions from the presentation/discussions

3.8 That minimal progress has been made by BT/Openreach in improving the broadband infrastructure in South Derbyshire, since the previous presentation from Tom Hamilton in May 2008.

3.9 BT/Openreach don't see a high demand for improved broadband service in certain areas of South Derbyshire. This is contrary to the views of Members and the public in these areas. It appears to be a "Chicken and egg situation", in that as the broadband service is poor people do not take it up and the only way to improve take up is by improving the broadband service. However to improve the broadband infrastructure is expensive and as such BT/Openreach do not appear to want to make this investment.

3.10 The poor broadband speeds available are impacting many businesses and individuals in parts of South Derbyshire. Specifically in areas such as Hilton and Etwall.

3.11 The future for improving the broadband infrastructure in parts of South Derbyshire through BT/Openreach is limited and will not happen before 2012. BT/Openreach appear to be putting their efforts into other parts of the Country that are seeing a greater demand.

3.12 BT/Openreach are businesses and subsequently they have to make a profit. Because of this their priorities are currently in other areas. This appears to have led to short-termism and a reluctance to invest in the infrastructure necessary to provide the best

South Derbyshire

District Council

service for all customers.

3.13 That the Council should continue to raise the profile of South Derbyshire, within BT/Openreach and other relevant organisations, in relation to the poor broadband service that is available in many parts of the District.

3.14 That the Council investigates other methods of external funding for broadband infrastructure improvements. This would include working with other Councils across Derbyshire and the East Midlands to endeavour to improve the broadband infrastructure in the area.

3.15 Such initiatives have taken place in other areas such as:
Cornwall see http://www.epractice.eu/en/cases/actnowcornwall
Yorkshire see http://www.digitalregion.co.uk/

3.16 That the Council writes to the relevant Government Minister's informing them that the poor broadband service available in many parts of the District is holding back businesses and individuals.

3.17 This will include participating in the Department for Business Innovation and Skills consultation on proposals for a Next Generation fund. See http://www.bis.gov.uk/next-generation-fund for further information.

3.18 The overall conclusion of the presentation and discussions was that BT / Openreach and Members have a wide difference of opinion and expectations of the broadband infrastructure in certain areas of the District.

4.0   Financial Implications

4.1   None arising directly from this report.

5.0   Background Papers

5.1   The reports to the Overview and Scrutiny Committee on the 7th May 2008, 25th June 2008, 17th September 2008 and the 10th December 2009 detail the findings and outcomes of the 2008 review.

5.2   The reports to the Overview and Scrutiny Committee on the 9th December 2009 details the ongoing work carried out in 2009.

BT
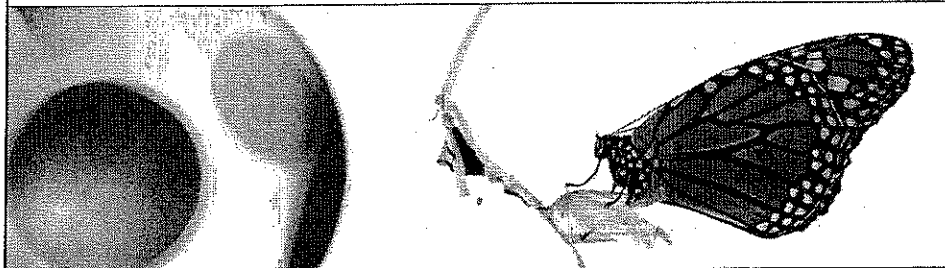
Broadband in South Derbyshire

Presentation to South Derbyshire DC – Overview and Scrutiny Committee
9th December 2009

Paul Bimson – Regional Partnership Director (East Midlands)
Carl Gange – Senior Operations Manager, Openreach

BT

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Agenda – points for discussion specified by SDDC

1. Broadban d speeds

2. Broadband technology developments

3. Broadband infrastructure update

4. Broadband for business

5. Digital Britain

6. Copper infrastructure

7. Next Steps

BT

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1. Broadband speeds

Negating factors:
- Distance from the exchange
- Contention ratio (the number of people sharing the same connection)
- Time of day (peak time is 18:00 to 23:00)
- Quality of modem and internal cables
- Quality of external cables
- Website capacity

- The performance of DSL on any given line in the access network is a function of the signal to noise ratio at the end of that line.
  - Signal is affected by the length, quality and dimensions of the copper (and sometime aluminium) cable,
  - Noise can come from
    - network crosstalk (directly related to the "fill" level of the cables in use,)
    - sources in the home or premises (including home wiring)
    - sources in the environment e.g. RFI from other electrical equipment.
- Geographic coverage achieved at any given speed also depends on
  - the topology of the access network
 - the statistical distribution of line lengths

These factors are identical for anyone operating DSL on BT's access network

BT

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Etwall exchange

- 73% of telephone lines within the Etwall exchange area have broadband
- Openreach contractually provide broadband on lines with a line loss of up to 70dB
- 1.0% of broadband lines within the Etwall exchange area are over 70dB
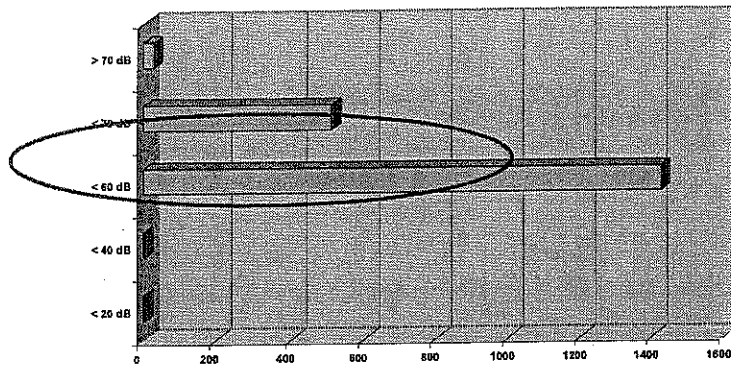

Broadband within Etwall

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BT
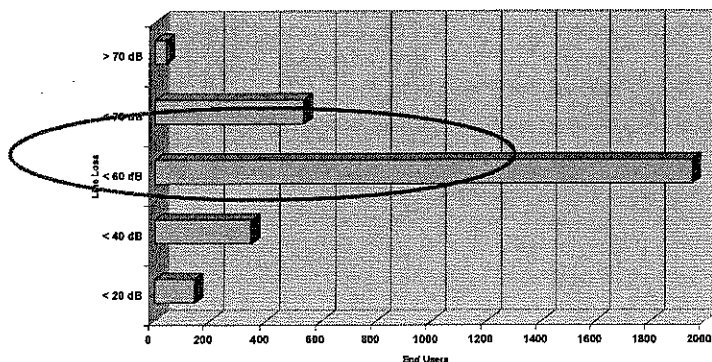
Hilton area

- 79% of telephone lines within Hilton area have broadband
- Major cable fill ranges from 67% in the higher gauge cables to 50% which is contributing to contention on the cables.

Broadband Line Loss Profile in Hilton

BT

Knipton case study

End user in Knipton (01476) 870*

- Length of line 6.7km – measured Line Loss @ 74dB

There are currently 60 spare pairs at the green box, so this would be for broadband only

To achieve 60dB at 1000m past the green box:
- 850m of 0.9 gauge copper @ £9,500 (excludes blockages)

To achieve 60dB at the end users premises:
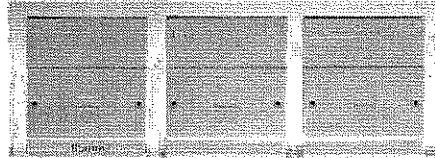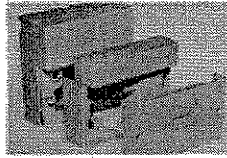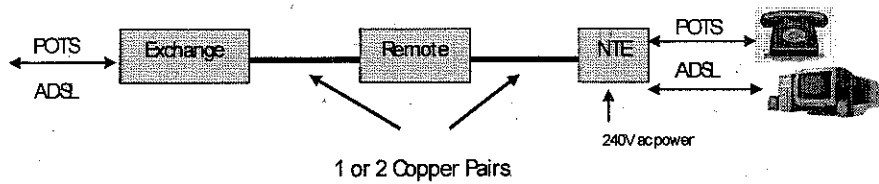- will require a further 1.4km of cable past the green box

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Potential remedies

BT iPlate (now)

BET (future)

POTS
ADSL

Exchange — Remote — NTE

POTS
ADSL

1 or 2 Copper Pairs

240V ac power

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2. Broadband technology developments

BT Wholesale offers a "mixed economy" of broadband products and services to communications providers throughout the UK...

Exchanges   Homes/businesses

IPstream

Copper – DSL
Up to 8Mbit/s

Copper

Copper – next generation
Up to 24Mbit/s

Copper

Wholesale Broadband Connect

Fibre to the cabinet
Up to 40Mbit/s
with improved upstream rates

Fibre   Copper

Fibre to the premise
Up to 100Mbit/s
with improved upstream rates

Fibre

Backhaul, core network and Service Provider interconnect

Ethernet

Mobile
Up to 7.2Mbit/s ... and beyond

Mobile Network

Broadband services that include exchange equipment, core networking, routing equipment and interconnection to service providers

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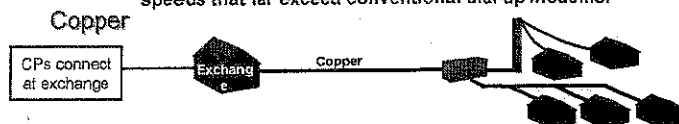## Openreach provides a copper based local loop broadband access product to communication providers on an equivalent basis

ADSL (or DSL for short) is a high-speed Internet access service that utilises existing copper telephone lines to send and receive data at speeds that far exceed conventional dial-up modems.
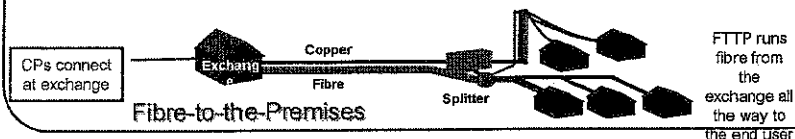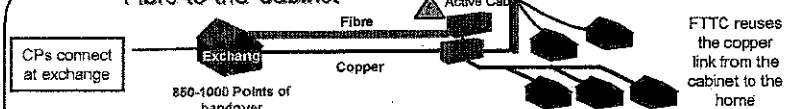
Copper

ADSL2+ extends the capability of regular ADSL by doubling the number of downstream bits.

Infrastructure	Technology	Openreach Product	End user speeds	Distance limitations	Who would purchase it?
Copper	ADSL (Asymmetric Digital Subscriber Line)	SMPF/MPF	Up to 8 Mb/s downstream, 1 Mb/s upstream	Approx 5km between the home and the central switch	Communication providers (CPs) BT Wholesale
	ADSL2+	SMPF/MPF	Up to 20 Mb/s downstream, up to 1.4Mb/s upstream	Approx 5km between the home and the central switch	CPs BT Wholesale

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BT

Openreach is deploying next generation fibre based broadband access products for communication providers

Fibre-to-the-Cabinet

FTTC reuses the copper link from the cabinet to the home

FTTP runs fibre from the exchange all the way to the end user

Fibre-to-the-Premises

Infrastructure	Technology	Openreach Product	End user speeds	Distance limitations	Who would purchase it?
FTTC (Fibre to the Cabinet)	VDSL2 (Very high speed Digital Subscriber Line)	GEA (Generic Ethernet Access) 1Gb/s	Up to 40 Mb/s downstream (15 Mb/s assured), 2 Mb/s upstream (or 10 Mb/s upgrade)	Approx 5km between the home and the central switch	CPs BT Wholesale
FTTP (Fibre to the Premise)	GPON (Gigabit Passive Optical Network)	GEA (Generic Ethernet Access)	40 or 100 Mb/s downstream, 2 or 10 Mb/s upstream	Allows for up to 80 km between the home and the central switch	CPs BT Wholesale

Our deployment decisions are driven by *demand* & *cost*...

BT Fibre-to-the-Cabinet

Active Cab

FTTC reuses the copper link from the cabinet to the home

Core network

Backhaul Fibre

Fibre to cabinet

Cost Factors

Fibre to the rest of our network	Fibre link to the "cabinet"	Power supply to "cabinet"	New SFBB "active" cabinet	Customer connection

These costs vary from location to location. The cost per customer gets much higher for: (i) cabinets serving few customers (ii) cabinets that are a long way from the exchange (iii) isolated cabinets

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BT
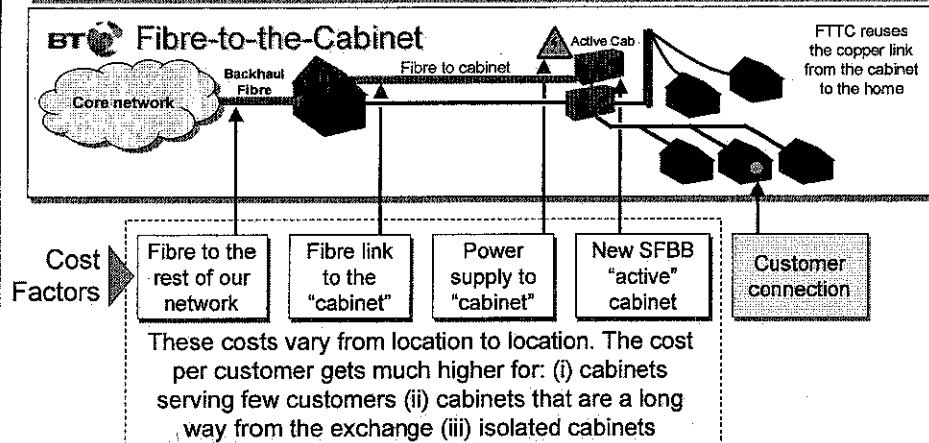
The costs can be challenging in some rural areas

Cost per Customer for "Fibre-to-the-Cabinet"

Deployment costs per premises connected (GBP)

2,000
1,800
1,600
1,400
1,200
1,000
800
600
400
200

Large, urban exchanges

Small, rural exchanges

Analysys Mason estimate that the cost per customer can range from under £400 to more than £1,700

(b) indicates areas that are far from the exchange

(a) indicates areas that are close to the exchange

London, >500k pop, >200k pop, >20k lines (a), >20k lines (b), >10k lines (a), >10k lines (b), >3k lines (a), >3k lines (b), >1k lines (a), >1k lines (b), <1k lines (a), <1k lines (b)

Source: Analysys Mason for the BSG

■ Optical distribution frame ■ Cabinet ■ Active equipment ■ Civils ■ Line migration ■ In-home

...which makes 100% coverage very expensive to achieve

UK-Wide Deployment Costs for Fibre-to-the-Cabinet

A different commercial model will be needed to address these more remote areas (as the cost per customer increases sharply here)

Source: Analysys Mason for the BSG

- Analysys Mason produced the graph shown above which suggests that the most remote 10% of the UK would cost the same to serve as the most urban 35%
- For the full report, see "http://www.broadbanduk.org" for details

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The costs for FTTP are significantly higher...

Cost per Customer for "Fibre-to-the-Premise"

Large, urban exchanges → Small, rural exchanges

Optical distribution frame   Active equipment + splitters   Civils (exc. final drop)
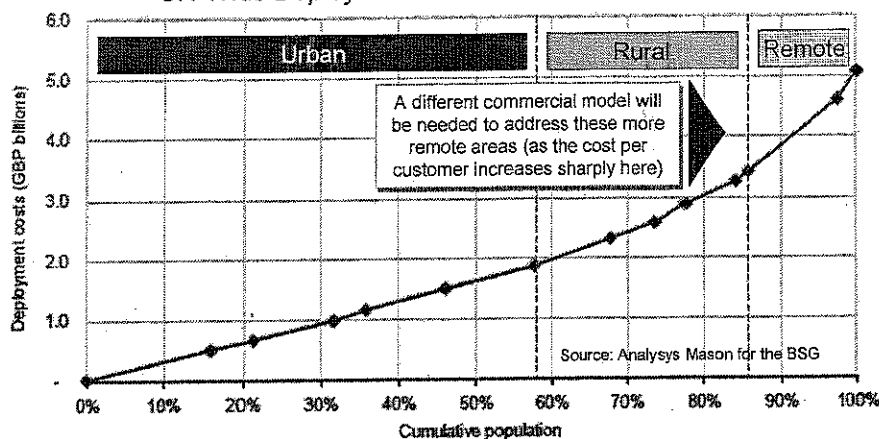Civils (final drop)   In-building wiring (exc. final drop)   CPE

Source: Analysys Mason for the BSG
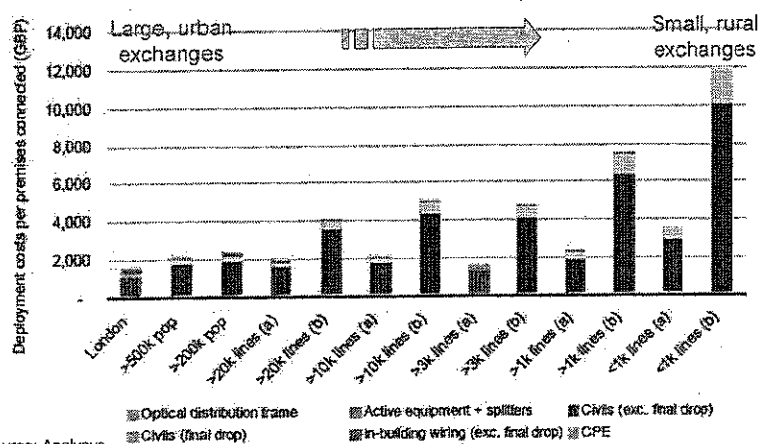
- The graph shown above has been produced by independent analysts "Analysys Mason" for the Broadband Stakeholder Group (BSG).
- For the full report, see "http://www.broadbanduk.org" for details.

3. Broadband infrastructure update

All 13 exchanges are enabled with ADSL Max (8mb/s)

- **Mickleover:** ADSL Max; LLU – AOL, C&W, O2/Be, TalkTalk, Sky, Tiscali,
- **Etwall:** ADSL Max
- **Repton:** ADSL Max & SDSL; LLU – TalkTalk
- **Overseal:** ADSL Max
- **Melbourne:** ADSL Max
- **Peartree:** ADSL Max (WBC by March end/Ethernet by December); LLU - AOL, Bulldog, O2/Be, TalkTalk, Sky/Easynet, Tiscali
- **Swadlincote:** ADSL Max, ADSL WBC, SDSL LLU - AOL, Bulldog, O2/Be, TalkTalk, Sky/Easynet, Tiscali
- **Burton-under-Needwood:** ADSL Max, SDSL
- **Tutbury:** ADSL Max, SDSL; LLU – TalkTalk
- **Kirk Langley:** ADSL Max
- **Sudbury:** DSL Max, SDSL; LLU - TalkTalk
- **Chellaston:** ADSL Max, SDSL; LLU - O2/Be, TalkTalk,
- **Shardlow:** ADSL Max

BT

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4. Broadband for business

Wholesale Ethernet

• BT provides the broadest range of CPs with a 'competition-ready' infrastructure on which to deliver their own services and sustain their business

• CPs benefit from BT Wholesale's carrier-grade quality of service and the tremendous bandwidth capacity and service flexibility potential offered.

• 614 nodes deployed. This gives 90% business coverage using fibre and 54% business coverage using Ethernet in the First Mile (copper).

BT

5. Digital Britain

1. Universal Service Commitment
- **Confirms Government's intention to deliver broadband universal service commitment (USC) at 2Mb/s by 2012 to nearly all people in the UK**

2. Next Generation Access
- Public support for 'the network of tomorrow' so consumers who are not expected to be reached by commercial deployment – referred to as 'final third of UK' – will be able to enjoy next generation access (NGA)
- **Creation of independent Next Generation Fund, based on 50p levy per month (£6 per year) on all copper lines (including cable)**
- **Fund available to communications providers, like BT, on tender basis providing a financial subsidy to bring super-fast broadband to 'last third of homes and small businesses**

BT

For locations that are unsuitable for fibre we are developing a range of broadband products to reach remote locations or improve current access speeds...

Product	Speeds
Satellite: Wholesale *BT Wholesale are developing a satellite broadband product with our partner Avanti for launch in 2010 with line speeds of 4Mb/s.*	5-10Mb/s Down
Sharedband; BT Retail / Plusnet BT Retail are developing a product that bonds copper pairs together to improve end user line speeds for ADSL, ADSL2+ and VDSL based broadband. These will mainly suited for business use.	2-10Mb/s Down
Broadband Enabling Technology; Openreach *BET technology 'boosts' the broadband signal half way down the line, to push the electrical signal that much further than standard ADSL to distances up to 12km – this is over double traditional reach. BET is most applicable when there are at least 10 lines on any one exchange that would benefit from it. However BET may not be so effective when there is a cluster fed from a single Cabinet or similar.* *BT Wholesale and BT Retail are developing BET based products for launch in 2011.*	1-2Mb/s Down 1Mb/s Up

BT

6. Copper infrastructure

9% reduction in the volume of faults reported and cleared in the last 12months (Nov08 vs Nov09) on the same number of exchange connections
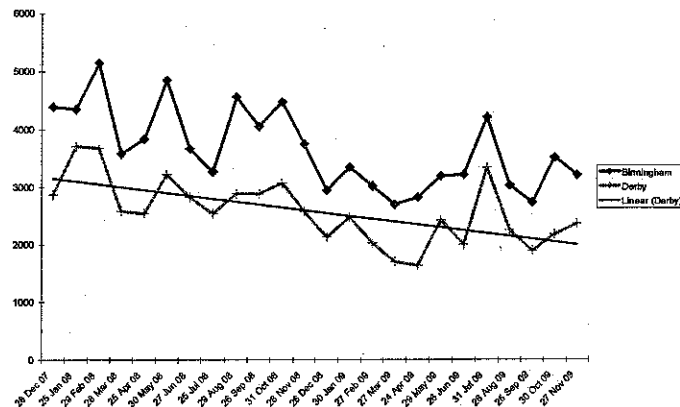
- investment in fault volume reduction ✔
- deployment of new test equipment ✔
- investment in our infrastructure ✔
- removal of legacy equipment ✔

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BT

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7. Next Steps

- **BT has already made a major investment in new network infrastructure and a competition-ready platform for a wide range of service providers**
  - How can we maximise this where it is available now or in the near future in terms of planning, implementation, demand generation, take-up, services and innovation?
- **The rollout plan will continue to 2012 and beyond based on exchange areas**
  - How does this meet the needs and ambitions of your place or region and is there a desire to understand and articulate these further?
  - What scope and appetite is there for intervention and mobilising the public sector, business, educational and community stakeholders together to take decisive action where acceleration or maximum coverage is a priority?
- **Supporting the UK to make Digital Britain a reality**
  - Your BT regional team can support you with information, advice and access to experts to help with strategy and planning through to implementation

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BT
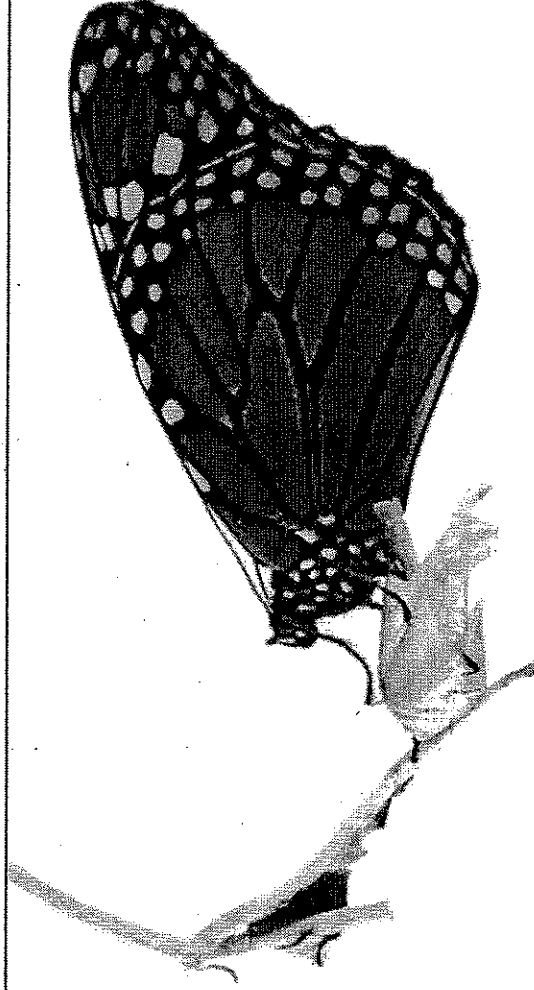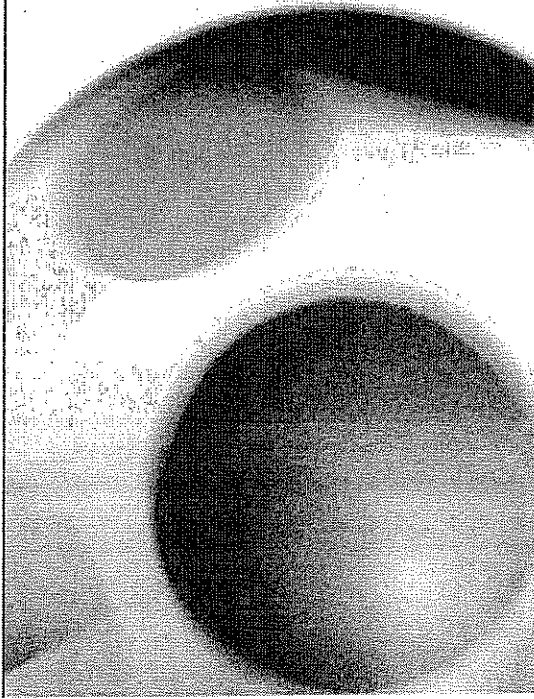
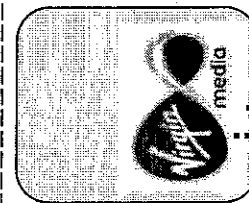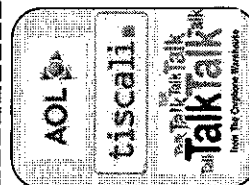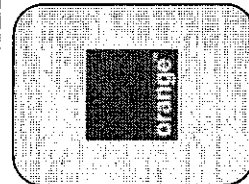# Broadband in South Derbyshire

Back-up slides

UK broadband market is competitive at all layers from end user services through to infrastructure

Broadband for Home & Businesses

O2/Be 3% 6%
Orange 5%
Sky 12%
BT 28%
Talk Talk 22%
Inc Tiscali
24%

UK market share Q2 09
Enders Analysis

Front end customer interface

Service providers
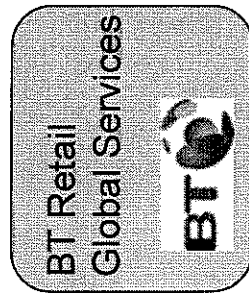
Integrated business processes / systems

Wholesale providers
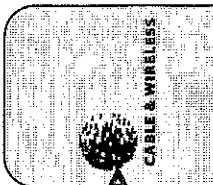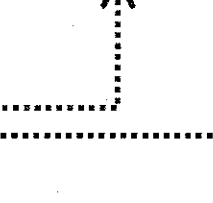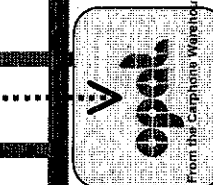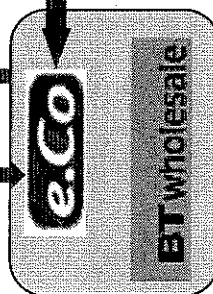
Integrated business processes / systems

Infrastructure providers

BT Retail Global Services

be*
O2

orange

AOL
tiscali
TalkTalk
from The Carphone Warehouse

sky

Virgin media

e.Co
BT Wholesale

opal
from The Carphone Warehouse

#easynet
Global Services

Virgin media

CABLE & WIRELESS

CABLE & WIRELESS

BT Local Loop Unbundling

EMP

openreach
BT

H2O networks

geo

vtesse

THALES

BT

e.Co

Wholesale Operational system

EMP

Equivalence Management Platform

BT

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© British Telecommunications plc

The UK has one of the most open, competitive and innovative communications markets in the world.....

BT invests over £2.5bn a year in building and maintaining modern networks which it opens up to other Communications Providers - creating one of the most open, competitive and innovative communications markets in the world - with wide reaching benefits and choice for consumers and businesses throughout the UK.

Higher consumer take up. c61% of UK households have a broadband connection[2]. Higher than 20 other European countries – including France, Italy and Spain.

Creating modern jobs. The UK has a higher proportion of ICT related jobs than the US or any of the major European economies[3].

Lower prices. Communication services in the UK are 33% cheaper than combined average prices in the US and major European economies[1].

Powering business. UK businesses drive more ICT value in the UK than businesses in the US or in any of the major European economies[3].

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Super>fast Broadband will enable a richer consumer experience

Super>fast Broadband

Personal Communications
- Multi-Line VoiP
- Multi-Party Video Calling

Connected Home
- More devices
- Richer Media
- More simultaneous Sessions
- Security Monitors

Social Networking
- Pictures, Music and Video
- BT Digital Vault
- Google & Other Apps

Home Entertainment
- HD Downloads
- HD Multi-Channel
- HD Multi-Room
- Games on Demand
- Web TV
- 3D TV

Public Services
- HealthCare: 24/7 Health Monitoring
- Education: Open Classrooms

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We are developing a complementary portfolio that offers a range of speeds over the full footprint of the UK...

Note; broadband speeds vary with distance for copper based products

Speed

Our strategic intent is to provide the fastest speeds over the largest footprint as possible

Super>fast broadband

FTTP

Evolution

Customers may choose Super>fast upgrade

FTTC

Faster Broadband

Customers may upgrade within footprint

Expansion Plans

ADSL2+

Broadband

Satellite, BET etc**

<100Mb/s

<40Mb/s

<20Mb/s

<8Mb/s

100%   75%   55%   40%

Reach
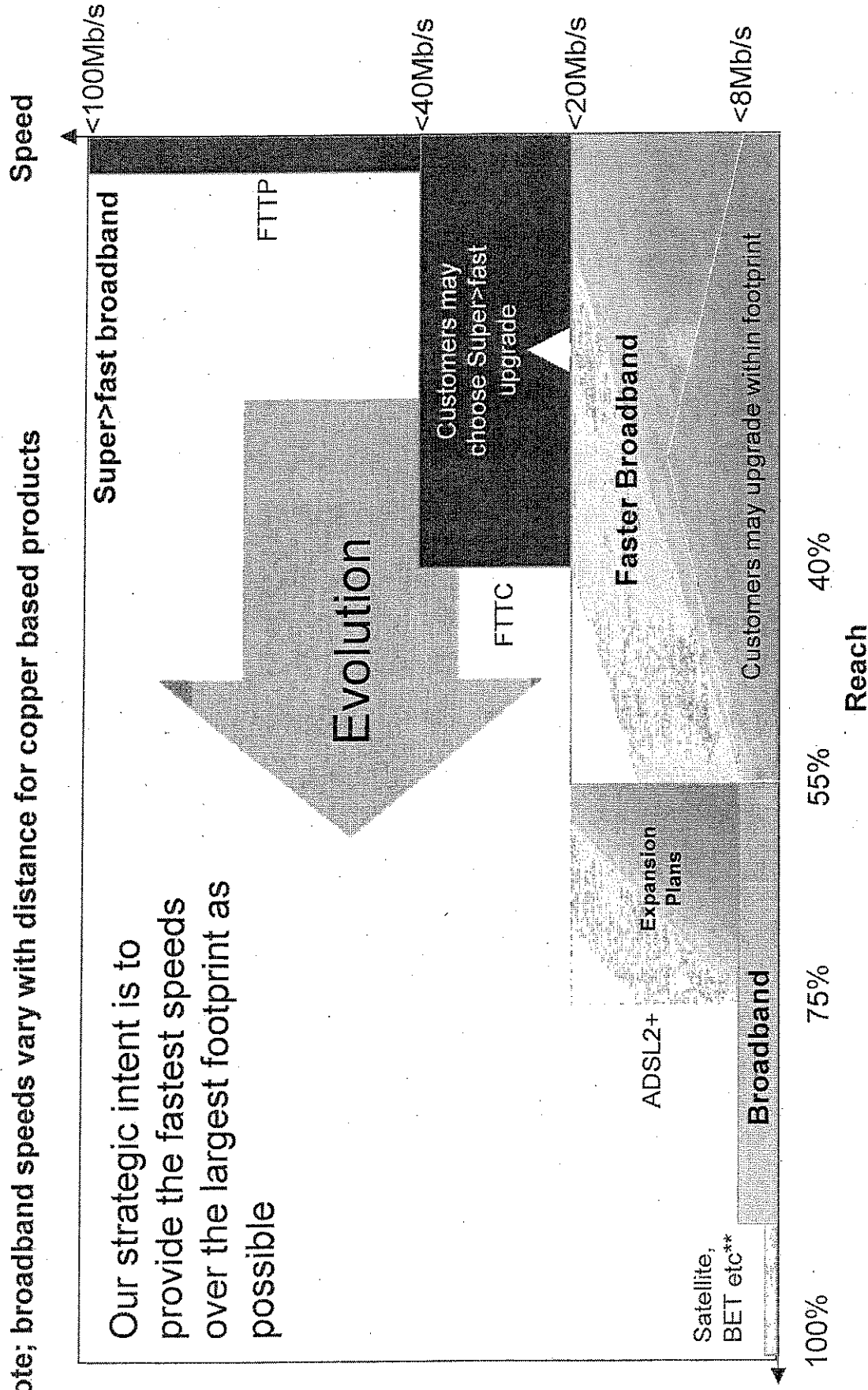
Massive increase in available bandwidth – driven by customer choice

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© British Telecommunications plc ** In development

BT

And we are accelerating our rollout – announced July 2009

- Early market deployment (FTTC)
  - Summer 2010: rollout to every region of the UK
  - Over **1.5 million** premises passed, including urban and rural locations

- We are investing £1.5bn to rollout fibre to 10 million homes and businesses, some 40% of the UK, by 2012

Key

FTTP	Fibre rollout Summer 2010
FTTC Trial/Pilot	Areas of NGA bid activity

Map labels:

Halfway, Glasgow Bridgeton, Glasgow Giffnock, Glasgow, Edinburgh Corstorphine, Edinburgh Craiglockhart, Edinburgh, Hetton-le-Hole, E Herrington, Durham, Headingley, Denton, Cheetham, Swinton, Foxhall, Pontefract, Armley, Ashton-u-Lyne, Castleford, Glossop, Porters End, Ingrebourne, Hoddesdon, Hornchurch, Highams park, Brentwood, Lea Valley, Hainault, Billericay, Barking, Loughton, Dartford, Mocdlord, Slade Green, Stanford-le-Hope, Greenwich, Eltham, Ebbsfleet, New Southgate, Waltham Cross, West Yorkshire, Low Moor, Manchester E, Hinckley, Stalybridge, Barnet, London, Basingstoke, Muswell Hill, Stamford Hill, Shipley, Prestwich, Chorton, Hyde, Moss Side, Walkden, Tottenhall, Wednesbury, Walsall, Wilmslow, Berkhamsted, Elstree, Sidcup, Bristol N, Bristol W, Downend, Altrincham, Urmston, Leamore, Fallings Park, Great Barr, N Penarth, Caerphilly, Barry, Whitchurch, Cornwall

Belfast, Lisburn, Northern Ireland

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Obtaining alternative versions of this document

If you would like this document in another language, or if you require the services of an interpreter, please contact us. This information is also available in large print, Braille or audio format upon request.

Phone: 01283 595795
email:customer.services@south-derbys.gov.uk

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यदि आपको ये दस्तावेज़ किसी दूसरी भाषा में चाहिये, या किसी दुभाषिये की सेवाओं की जरूरत है तो हमें सम्पर्क ः की कृपया करें। ये जानकारी माँग करने पर बड़े अक्षरों, ब्रेल या आडिओ के रूप में भी उपलब्ध करवाई जा सकती है।

ਜੇ ਤੁਹਾਨੂੰ ਇਹ ਦਸਤਾਵੇਜ ਕਿਸੇ ਦੂਸਰੀ ਭਾਸ਼ਾ ਵਿਚ ਚਾਹੀਦਾ ਹੈ, ਜਾਂ ਕਿਸੇ ਦੁਭਾਸ਼ੀਏ ਦੀਆਂ ਸੇਵਾਂਵਾਂ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਸਾਡੇ ਨਾ ਸੰਪਰਕ ਕਰਨ ਦੀ ਕ੍ਰਿਪਾ ਕਰੋ ਜੀ ਇਹ ਜਾਣਕਾਰੀ ਮੰਗ ਕਰਨ ਤੇ ਵੱਡੇ ਅੱਖਰਾਂ, ਬ੍ਰੇਲ ਜਾਂ ਆਡਿਓ ਦੇ ਰੂਪ ਵਿਚ ਵੀ ਉਪਲੱਬ ਕਰਵਾਈ ਜਾ ਸਕਦੀ ਹੈ।

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