Appendix A

THE MORAY COUNCIL

HR AND ICT SERVICES

The Moray Council Digital Connectivity Strategy 2012 - 2015

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1. Introduction

1.1 Purpose of the document?

High speed digital connectivity is an essential part of Scotland's 21st Century infrastructure; it will help to enable

- the delivery of efficient public services
- the creation of long term sustainable economic growth and;
- an improvement in people's quality of life through increased digital participation.

The purpose of this document is to set out a high level strategy to ensure ongoing provision of high speed communications links for the Council's own wide area network following the expiry of the Pathfinder North contract in March 2014 and also to deliver next generation broadband (NGB) for communities and businesses in Moray.

1.2 What is Next Generation Broadband?

There is no definitive speed that constitutes next generation broadband. However, the European Commission's 'A Digital Agenda for Europe' sets 30 Mbps as a target.

1.3 Why is Next Generation Broadband important?

Access to next generation broadband has a number of benefits for people and communities, for businesses and for a range of other organisations.

Public services can be delivered in different ways making them more accessible and more efficient. These improvements include the use of tele-healthcare solutions to allow people to access health and care services from their homes or communities.

It would also support more flexible ways of working including increased home working thereby reducing costs and travel and in turn reducing carbon emissions.

It would allow existing businesses to exploit new opportunities and allow them to communicate more easily with each other and their customers. Access to high speed reliable broadband will also attract new businesses to set up or relocate in the area.

It would provide greater choice for how, where and when people access services. Online learning becomes easier, faster and more interactive. People will be able to connect face to face with family and friends through high definition video and will be able to access a wider range of content on demand e.g. films and television.

2. Vision

As an innovative and developing rural authority, Moray Council recognises that it must be in the vanguard of high speed digital connectivity. We aim to have in place a broadband infrastructure that enables us to deliver our priorities, generate efficiencies and develop new ways of workings. In particular, high speed broadband will be essential to:

- Efficiency
  - delivering efficient, citizen centred responsive services
  - supporting new and flexible ways of working
  - providing accessible services that the customer chooses to access digitally
- Economic Development
  - enhancing Moray's appeal to inward investment
  - opening new opportunities for the businesses of Moray
  - creating an inclusive digitally enabled community
- Education
  - enhancing the quality of learning and teaching by fully supporting Curriculum for Excellence
  - opening opportunities and options for delivery of education in Moray
  - enabling lifelong learning and further education

The Council will seek to support the delivery of high speed broadband in Moray as a means to ensure the future development and sustainability of our services, our economy and our community.

We will deliver this vision through the actions set out in Section 7 of this document, working in partnership with others to secure the best outcome for Moray.

3. Context

3.1 National

Following on from the European Commission's 'A Digital Agenda for Europe' and the UK Government's 'Britain's Superfast Broadband Future', the Scottish Government set out its aspirations for Scotland in 'Scotland's Digital Future: A Strategy for Scotland'; the ambition is:

- "that next generation broadband will be available to all by 2020 and that significant progress will be made by 2015 and;

- that the rate of broadband uptake by people in Scotland should be at or above the UK average by 2013 and should be the highest among the UK nations by 2015."

The targets are set in the context of wider activities to ensure that Scotland is positioned to take full advantage of the opportunities offered by the digital age; these include improving public service delivery, growing the digital economy, and increasing broadband connectivity and digital participation.

'Scotland's Digital Future – Infrastructure Action Plan' identifies four programmes of work required to deliver the vision:

'Programme 1: Achieving a step change by 2015' seeks to address the current digital divide and install infrastructure in areas where there is no market coverage. It aims for significant uplift speeds for everyone by 2015 with a target of achieving 40 – 80 Mbps for 85 – 90% of premises. The procurement strategy will also seek to extend the reach to deliver best possible speeds where the target speed range will not be possible.

'Programme 2: Achieving world-class by 2020' will develop a longer term plan in parallel with the initial programme to build a sustainable world class infrastructure in partnership with industry.

These two programmes are underpinned by:

'Programme 3: Demonstrating and delivering innovative and local solutions' will promote local projects and programmes and trialling new technologies.

'Programme 4: Increasing take-up and stimulating demand' will be aimed at raising digital participation rates both for businesses and individuals as well as raising demand for services.

The action plan acknowledges projects that are already underway to deliver the necessary infrastructure for next generation broadband. Notably, one of the key actions is to "work with the Highlands and Islands Enterprise to support their project, contributing effectively and economically to the national

strategy". The scope of this project is covered in more detail in paragraph 3.2 below.

In relation to the delivery of public services, the action plan also makes reference to John McClelland's 'Review of ICT Infrastructure in the Public sector in Scotland'. Amongst other things, the review focuses on the scope both to establish common standards on public sector networks and to aggregate public sector demand for services.

The vision is that there will be a Scottish Wide-Area Network (SWAN) for use by any, and potentially all public sector organisations. The SWAN will be delivered as a single physical network for the whole of the Scottish public sector. A linked programme has been set up by the Scottish Government to implement SWAN.

3.2 Regional

In June 2011, the Highlands and Islands Enterprise (HIE) initiated a procurement to appoint a suitably experienced partner to co-invest in the provision of next generation broadband throughout the region.

The ambition is that:

"HIE, with support from regional partners, is committed to delivering NGB to all parts of the Highlands and Islands. The project is designed to lay the foundations to meet the Scottish Government's target of world-class NGB by 2020, and delivering a significant first step towards the 2015 target of providing 85-90% of premises 40-80 Mbps broadband and the rest with 2Mbps or better."

In undertaking such a transformational project, HIE is aiming to secure the delivery of a step change in connectivity across a large sparsely populated region, which the commercial sector will not service unaided; by doing so it is envisaged that this will make a real contribution to Scotland's prosperity and seek to address the possibility of a rural/urban digital divide.

The project covers all seven local authorities in the Highlands – The Highland Council, The Moray Council, Orkney Islands Council, Shetland Islands Council, Western Isles Council, Argyll and Bute Council and part of North Ayrshire Council (Arran and The Cumbraes).

It is anticipated that the connectivity improvements required to roll out NGB will deliver further benefits in addition to the main project objectives. These include:

- supporting new developments in tele-health, remote education and public service delivery
- providing further coverage of 3G and the connectivity required to deliver 4G in the region

- providing the core connectivity required to support the development of the renewable energy sector
- delivering high quality connectivity to decrease the cost of providing the public sector connectivity to the main Pathfinder North partners

4. Current Provision

4.1 The Moray Council Wide Area Network

The Council is well served in terms of the infrastructure for its Wide Area Network. This is provided through the Pathfinder North (PFN) contract. PFN is a partnership between five local authorities in the Highlands and Islands region; The Moray Council, Highland Council, Argyll and Bute Council, Orkney Islands Council and Shetland Islands Council.

Following an aggregated procurement, the contract was awarded in March 2007 to Thus PLC (subsequently taken over by Cable & Wireless IN 2008) for a period of seven years. The contract provides a managed service for the majority of the sites (around 100) on the Council network, including council offices, schools and libraries.

The bandwidth per site varies widely and is dependent on the size and services provided at the site. Speeds currently range from 4 Mbps for a small site to 300 Mbps for the main connection into the corporate data centre.

The bandwidth at most sites has remained static but there are a number of sites that have been upgraded since the contract was implemented. These sites are mainly secondary schools where, in some instances, the current bandwidth is now more than double the initial provision. This is mainly attributable to the use of Glow and SEEMIS.

Glow is a national intranet developed exclusively for Scotland's state schools community. The main purpose of Glow is to enhance the quality of learning and teaching in the classroom by fully supporting the Curriculum for Excellence (CfE).

SEEMIS is the Education Management Information System for the schools. It is delivered via an externally hosted managed service and is used by all schools.

While the upgrades to date have been solely for the secondary schools, the general trend for utilisation at the schools shows a steady increase year on year.

The other site where bandwidth has almost doubled is the corporate data centre. This reflects the move towards more centralised ICT systems to support the flexible ways of working that are being implemented to support the Designing Better Services Programme.

4.2 Commercial Provision

According to the Ofcom (Independent regulator and competition authority for the UK communications industries) Infrastructure Report 2011, the fixed

broadband provision in Moray is ranked amongst the slowest in the country as shown in Figure 1 below:

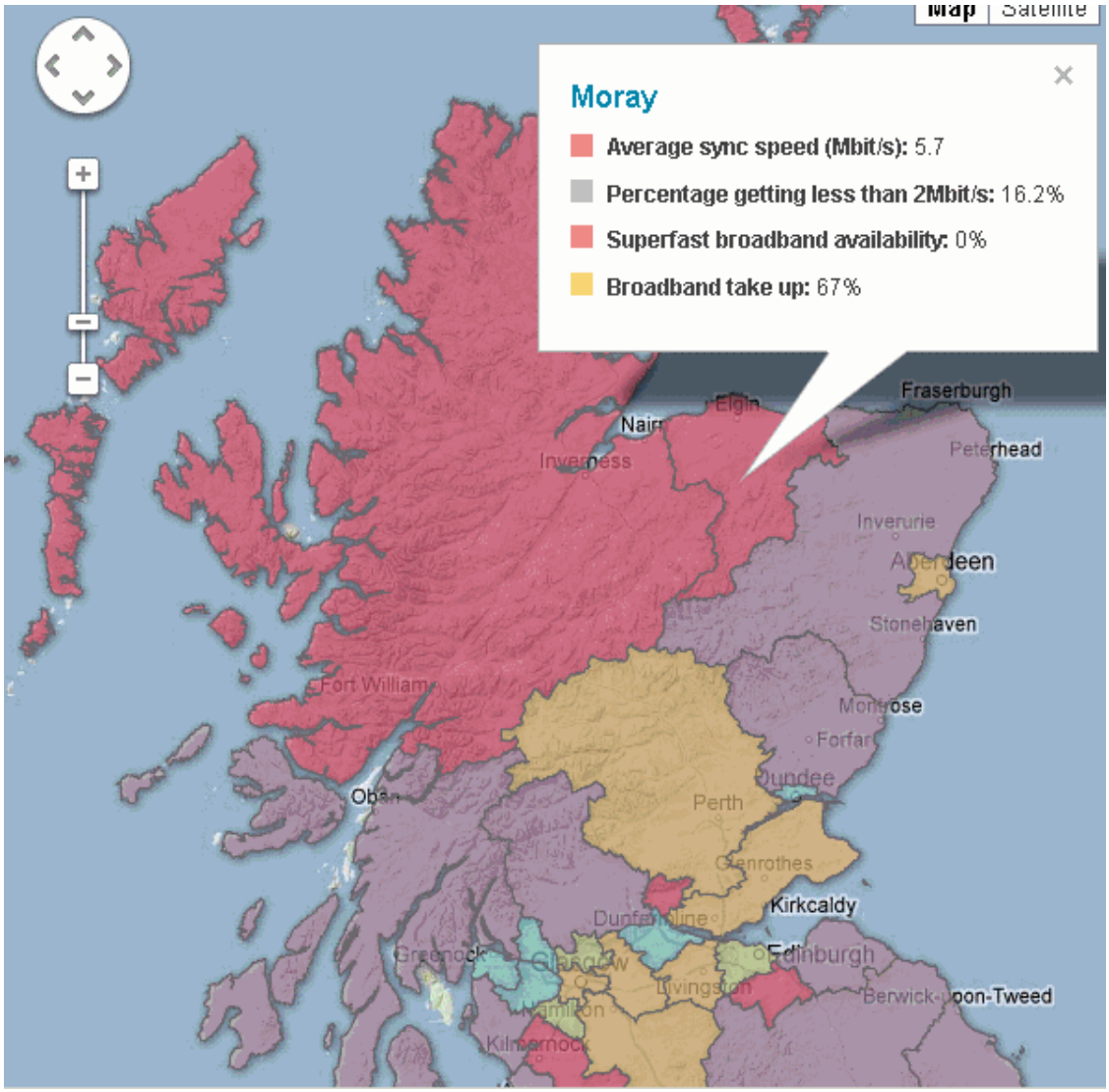

Figure 1

The average broadband speed of 5.7 Mbps is low in comparison with the Scottish average of 7.6 Mbps. The percentage getting less than 2Mbps is 16.2% which is significantly higher than the national average of 13%. Broadband take up of 67% compares favourably with the national average of 65%. At present, next generation (or superfast) broadband is not available at all in Moray.

In terms of Mobile Services, the provision of 2G coverage for Moray is more favourable than fixed broadband provision; 2G for Moray is ranked at the middle of the scale with coverage from all operators at 87% and less than 1% of premises with no reliable signal; the national figures are 94.5% and 0.2% respectively.

Similar to the provision of fixed broadband services, the position in relation to 3G coverage in Moray is ranked at the lowest level. Coverage from all operators is 22% and the percentage of premises with no reliable signal is 12% compared with national figures of 63% and 3.9%. When expressed in terms of geographic coverage, the corresponding figures are < 1% and 53% (national figures are 3.1% and 60.6% respectively). In general terms the position for 3G coverage in most areas of Scotland is ranked at the lowest level.

4.3 Challenges

The Pathfinder North provision is due to expire in March 2014. Although the partners have been considering the provision post contract for quite some time, one of the main challenges has been that of future funding. The project attracted significant investment of £63m (90% of the total project costs of £70m over seven years) from the Scottish Government.

During preparations for the procurement of a new service post 2014, the Scottish Government made it clear that there would be no funding available for future provision. This prompted concerns that there would be a significant funding gap.

One of the main issues is that Ethernet services (high speed broadband circuits used by large businesses, the public sector, Internet Service Providers and mobile phone operators) are only available at a limited number of Points of Presence (PoPs) provided by BT and Cable and Wireless centred around the largest towns. This leaves large parts of the region without access to affordable high speed services.

In terms of the local economy, one of the high level strategic objectives of 'The Moray Economic Strategy' is:

- transforming the physical infrastructure to enhance Moray's appeal to inward investment and people

Amongst the specific challenges identified in the strategy is the "perceived remoteness relative to the strategic road and rail network and key markets and *concerns over the capacity of broadband infrastructure*". The latter point is borne out by the figures in 3.2 above.

BT's current commercial rollout of next generation broadband will reach 65% of the UK by 2014; the corresponding figure for the Highland and Islands is 18%. Alternative providers such as Virgin Media have no presence in the region resulting in a lack of competition for broadband services.

5. Future Demands

5.1 Council Services

In order to assess the future needs of the PFN service, the partnership commissioned a specialist telecoms consultancy firm, FarrPoint, to consider future bandwidth requirements to inform the specification of the services post 2014.

In essence, the review consisted of an analysis of current bandwidth utilisation from Cable and Wireless in conjunction with predictions for the change in site bandwidth between current utilisation levels and 2014 thus setting the baseline for any future provision.

The methodology involved assessing future network changes anticipated by Partners through consultation, engaging with Education Scotland on future network requirements, analysing historical bandwidth utilisation trends and analysing Industry trends in user and application use of bandwidth.

The findings confirmed that all partners use the following Virtual Private Networks (VPNs) through the Cable and Wireless service:

- Corporate – Council offices and admin functions in schools and libraries
- Education – Schools
- Public – Libraries and Community Centres

Factors influencing corporate utilisation:

Centralisation
This includes the move from local file and print services to a centralised storage system. Also includes hosting applications in the data centre and a move to Thin Client/web based models and less client server applications. Centralisation will increase the network utilisation.

Cloud based computing
There is a growing trend in this area. Applications delivered via the Cloud will increase the bandwidth utilisation from the data centre out on to the Internet.

Virtual Desktop Infrastructure (VDI)
VDI supports flexible working. VDI is reliant on the network as again services are centralised and VDI will likely increase the bandwidth utilisation across the network.

IP Telephony
IP Telephony uses the data network to handle telephone calls. To ensure that call data gets the appropriate level of priority, it requires Quality of Service (QoS). Therefore any decrease in future bandwidth will have a proportionate (detrimental) effect on QoS for IP Telephony.

With the exception of Cloud based computing the above areas are all currently relevant to Moray and they underpin the technologies that are fundamental to the Council's Designing Better Services Programme. It is likely that Cloud based computing will become more relevant as more suppliers are moving towards delivering infrastructure and software services using the Cloud.

Factors influencing Education utilisation:

Increased use of Glow

Plans are already in place to replace the existing Glow system and it is anticipated that the additional services provided in the new system will increase bandwidth utilisation. Examples of this are the use of media, such as video, to create 'E-Portfolios' of their work and also a move towards 'Bring Your Own Device' which would increase the pupil to device ratio (Currently 4:1 in secondary schools and 6:1 in primary schools); this will likely increase bandwidth use significantly.

Internet Access

Education Scotland currently provides the Interconnect for the schools Internet connection. Utilisation figures from Education Scotland on the utilisation show an exponential growth of the interconnect equating to a 45% average increase per annum since 2004.

Other applications

SEEMIS, the schools administration system, is currently hosted externally. Use of video technology to support delivery learning and teaching is expected to increase and will require additional bandwidth.

Factors influencing Public VPN utilisation

The Public VPN is used for public access to the Internet at sites such as Libraries; in Moray, the public can access the Internet via the People's Network. Analysis has been carried out in the past and Nielsen's Law indicates network speeds for high-end home internet users would increase by 50% per year or double every 21 months. Looking at the UK's broadband history, this does hold true; it is expected therefore that growth on the Public VPN will be 50% per annum.

Taking all of the above into account along with the current utilisation it is estimated that approximately 10% of PFN sites will require higher bandwidth in 2014.

5.2 The Moray Economy

The 'Moray Economic Strategy' foreword states that:

"The Moray Economic Strategy has been prepared by the Moray Community Planning Partnership to provide a long-term economic diversification strategy for the area. This has been prepared in consultation with the people of

Moray, and articulates the ambitions we all hold for the region's future, and all that it may become."

The strategy is structured around delivering actions under the following drivers of competitiveness:

- People
- Business
- Infrastructure
- Communities and;
- Identity

The strategy identifies requirements for improved infrastructure in most of these areas.

People

One of the priorities in this area is the development of a world-class education system at all levels. The technology requirements for schools are documented elsewhere in the document. For further education and lifelong learning, increased bandwidth means that online learning becomes much easier, faster and more interactive. Downloading materials is faster and smoother. Live streaming of lectures and online tutorials means that students can access teaching material wherever they are located.

Business

There are a number of sectors where the provision of high quality connectivity infrastructure has been identified as a key priority. These include Energy, Life Sciences, Creative Industries, Financial and Business Services, and Academic and Research Capacity. Notable projects include the completion of the Moray Life Sciences Centre and also the identification of Buckie as potential for future activity as part of the National Renewables Infrastructure Plan.

Infrastructure

"Moray's location relative to the main markets for its goods and services, and relative to Aberdeen and Inverness means that the quality of strategic transport, connectivity and other infrastructure is a critical factor influencing investment decisions. Moray needs to be in the vanguard of digital connectivity development to overcome perceptions of peripherality."

Priorities include the promotion of investment in mobile and broadband networks to improve the quality and capacity to support Moray's development and digital connectivity, and encouraging a broader range of service providers.

6. The Way Forward

It was originally envisaged that the future provision of the Council's Wide Area Network would be achieved by undertaking a joint procurement exercise to implement a new service following the expiry of the current Pathfinder North contract. It was also envisaged that the HIE Next Generation Broadband project would address the provision of high speed broadband services for business and communities.

It has been evident for some time now that the Scottish Government are unwilling to provide any funding for the re-procurement of a service to replace the PFN contract even though it would be an aggregated procurement. This has led to real concerns amongst the PFN partners about the affordability of a future solution due to the lack of infrastructure in the region and the associated lack of competition. A potential consequence of this would be that the various partners would not be able to deliver the full range of council services that are currently provided under the PFN provision.

However, it is now clear that the Scottish Government's vision is to create a Scottish Wide Area Network (SWAN) that will be open for use by any, and potentially, all public sector organisations. This builds on the work identified in John McClelland's Review of ICT Infrastructure in the Public Sector in Scotland.

The underlying principle of a public services network is that by aggregating demand the cost of procurement and service delivery will be significantly reduced. The procurement for SWAN will implement open access infrastructure and will also utilise open access infrastructure where it already exists; this is in line with the themes of the McClelland review.

It is also clear that the scope of the HIE project has changed following the allocation of £120m funding from the Scottish Government. As well as providing the infrastructure for next generation broadband for businesses and communities it is also envisaged that the HIE project will provide the essential backhaul upgrades to bring all Local Authorities within the project affordable Ethernet services for main population centres, main Pathfinder sites locations and key enterprise sites.

In terms of the current position with SWAN, the Scottish Government has initiated the programme and the governance arrangements are in place; the SWAN programme reports into the Scottish Public Sector National ICT Board. A vanguard project has been set up to implement the first phase of the SWAN programme.

At recent PFN Project Board meetings, the possibility of joining the SWAN Vanguard Project has been considered. Whilst it is recognised that SWAN will be the future solution, there were still concerns about what SWAN will actually deliver as well as the timescales for delivery.

The Scottish Government have advised that the procurement will be commencing imminently and that the contract will be signed by October 2013. It is planned that the resultant new SWAN infrastructure will be 'Ready for Service' and the vanguard organisations transitioned by April 2014.

Whilst these timescales do fit in with the expiry of the existing PFN contract, the partners recognise that there is still a significant risk that the SWAN implementation will not be complete before the contract expires. This is based on the partners' experience from the rollout for PFN, which took over two years to complete.

As a result of the risk associated with the ambitious implementation timescale for SWAN Vanguard, the Pathfinder partners have proposed that the best option is to commit to the Vanguard project but to continue negotiations with Cable and Wireless for a two year extension to the PFN contract. This will ensure continuity of service for the PFN partners should there be any delays, either in the procurement, or the implementation phase of the SWAN Vanguard project.

In terms of the current position with the HIE project, discussions are still taking place with the preferred supplier, BT Although high level modelling has taken place to see what might be possible given the current funding allocation, the detailed solution has yet to be submitted in the Best and Final Offer.

Although the national strategy doesn't stipulate a minimum speed, HIE have stipulated to BT that their target is to provide >2 Mbps to 100% of the region. It will also be a requirement that there should be an equitable rollout across all Local Authority areas. It is expected that contract negotiations will be complete by the end of 2012 and that the implementation phase will begin early in 2013.

Scottish Government has recently announced that there will be funding available to help communities in the 10-15% where the HIE NGB project will not reach. A new service, Community Broadband Scotland, is being launched to help kick start community-led broadband projects in rural communities.

HIE is leading the delivery of Community Broadband Scotland throughout Scotland; the project is a partnership between Scottish Government, HIE, Scottish Enterprise, COSLA and local authorities. A website and telephone service will be available in October 2012 and a full advisory service and seed fund will be available in 2013.

Whilst the way forward is clearer now, in that SWAN will provide the connectivity for the Council's wide area network and the HIE project will provide some of the infrastructure for this, as well as the core infrastructure for the next generation broadband for businesses and communities, it is still an emerging picture.

It is expected that the SWAN service will cost less than the PFN provision due to the aggregation of demand across all of the public sector organisations but

the full extent of this will not become clear until the procurement has been completed.

At this stage, it is not anticipated that the Council will have to contribute to the HIE NGB project. However, once the contract negotiations with BT conclude, it is not inconceivable that the provision will fall short of the 85% target set in the national strategy. If this were to be the case, consideration may need to be given to making a contribution towards the project costs.

7. Next Steps

In terms of the two project streams the next steps are as follows:

Corporate Wide Area Network

- Work with the PFN partners to ensure that the views and requirements of the partnership are represented at the SWAN Programme Board
- Work with the PFN partners to negotiate a contract extension with Cable & Wireless
- Appraise Council at the earliest possible opportunity in relation to any potential funding gap

HIE NGB Project

- Work with HIE to develop the Infrastructure Action Plan for Moray
- Work with Economic Development and the Moray Community Planning Partnership to raise awareness of the HIE next generation broadband project
- Establish 'signposts' to the Community Broadband Scotland service using appropriate channels

Links to National Strategies

- Work with other local authorities and partners to ensure the council is involved and benefits from the national projects and activities as set out in the Local Government ICT Strategy.
- Review the Council's ICT strategy to ensure the Council is prepared to engage and benefit from national developments

• 8. Glossary

2G	The second generation of the mobile telephone network, capable of delivering voice and slow data services (including SMS text services).
3G	The third generation of the mobile telephone network, capable of delivering broadband equivalent speeds to mobile telephones, smartphones, laptops and handheld/tablet computers.
4G	The fourth generation of the mobile telephone network. 4G is likely to be capable of speeds up to 100 megabits per second.
BT	British Telecommunications plc
Backhaul	The links by which data are transmitted from a local telephone exchange back to the core or backbone of the operator's network.
Cloud based computing	Location-independent computing, whereby shared servers provide resources, software and data to computers and other devices on demand.
COSLA	Convention of Scottish Local Authorities
Glow	National intranet for Scotland's state schools
HIE	Highlands and Islands Enterprise
IP Telephony	IP Telephony uses the data network to handle telephone calls.
Mbps	Megabits per second, a measure of data transfer speed
NGB	Next generation broadband
Ofcom	Office of Communications – the UK's independent telecommunications regulator and competition authority.
PFN	Pathfinder North partnership comprising The Moray Council, Highland Council, Argyll and Bute Council, Orkney Islands Council and Shetland Islands Council.
SEEMIS	The Education Management Information system used by Moray's schools.
SWAN	Scottish Wide Area Network, a single physical network for all public sector organisations in Scotland – in effect an 'Internet for Government'.
VDI	Virtual Desktop Infrastructure is a virtualisation technology that is used to separate the desktop computing environment from the physical computer; it runs on centralised servers.
VPN	Virtual Private Network – a VPN provides security so that traffic sent through the VPN connection stays isolated from other computers on the intermediate network.

9. Further Reference

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