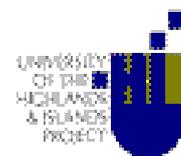# THE FUTURE OF BROADBAND TELECOMS PROVISION IN THE WESTERN ISLES AND ASSOCIATED SKILLS DEVELOPMENT REQUIREMENTS

Management Summary

A DESK BASED RESEARCH REPORT ON BROADBAND TELECOMS IN RURAL AREAS AND RURAL ICT SKILLS NEEDS

(WESTERN ISLES OF SCOTLAND)

MARCH 2001

WHAT IS BROADBAND?

In layman's terms, broadband can be equated to a roadway network.

The wider and better the road the more traffic it can carry efficiently.

The wider and better the communications pipe for 'data' traffic between the Western Isles and the rest of the world, the less the effects of remoteness are and the increased potential for integration into the global Information Society.

TECHNOLOGY	TRAFFIC
56K Modem	Single track road
ISDN2	Double track road
ADSL/Cable	M25 around London
Broadband (2Mbps+)	Los Angeles 7 lane freeways

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Management Summary

Introduction

As evidenced by a multitude of developments, society is now rapidly progressing into a new era - the Information Age. It is becoming widely recognised that for participating in this new age a broadband telecommunications infrastructure is the essential enabling technology. For the Western Isles this provides a unique opportunity to capitalise on these advances in a way that can provide for future economic needs.

This report was commissioned to facilitate early adoption of the most appropriate infrastructure investments, which will ensure that the early foothold which the Western Isles have gained in the Information Age continues and increases apace to the benefit of future generations. We need to be able to both anticipate and capitalise on ICT developments in terms of creating jobs and a higher standard of living for residents of the Western Isles.

Situation in the Western Isles today

The Western Isles are currently served by one dominant telecoms supplier, BT. Throughout the islands there are 35 telephone exchanges, of which 28 are an older technology[1] with limited ability to be upgraded to meet future demands. A second supplier, Thus, has installed a fibre network to strategic points in Stornoway but this does not link to any other locations in the Western Isles.

Another issue is the fact that the Western Isles are currently served by microwave links to the trunk network and no undersea fibre link exists. The study revealed that the current trend lies in optical fibres and this may therefore limit the islands' ability to implement broadband technologies of the future, particularly if growth in the ICT sector continues at the rapid rate experienced in recent years, demanding ever higher bandwidth.

Findings and recommendations

The report looked at the currently available broadband technologies and some that are just beyond the horizon but may come to the fore soon. It concludes that early adoption of fibre technology could deliver lasting and radical social and economic change in the Western Isles. The report recommends to implement a strategy to deliver "fibre to the home" and "fibre to the business".	**"Fibre to client" strategy**
To achieve this goal the Western Isles should link into the main trunk services in mainland Scotland via undersea fibre links.	**Undersea fibre links**
Broadband Wireless Access was identified as being a cost effective solution with a relatively short rollout timescale. This was seen as complementary to fibre and a possible interim or transnational solution. Further research needs to be done in this field.	**Broadband wireless access**
A public-private partnership between the local stakeholders could form the basis of a phased and cost effective rollout of a broadband network into the rural areas. Main locations such as schools, health centres, etc. could form the hubs, which would enable broadband services to eventually extend to households and community focused centres throughout the Western Isles.	**Public-private partnership**
The report further recommends consideration of the strategy adopted in other rural areas where any upgrading and repairs of roadworks or relaying of sewers, water services, power or gas, include the laying of suitable ducts to distribute fibre cables. The laying of ducting as a matter of course when digging up roads, pavements, new business and housing sites is recommended as a strategy to speed up connectivity of homes and offices with minimal cost implications.	**Rollout strategy**
An opportunity exists to focus on in-demand ICT skills to plug the developing skills gap and encourage specialist teleworking and outsourcing teams to become established. Such specific ICT skills outlined within the report combined with the appropriate generic skills will potentially provide the catalyst to enable a transition in the Western Isles workforce to one compatible and in-demand within the new 'Digital' economy. A pilot project targeted at those individuals on the ICT skills register and school leavers could be progressed.	**ICT skills strategy**

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[1] System X and UXD5, respectively

Timescale

With recent changes at both regional and national levels there is a genuine willingness to stimulate radical change in the islands and to transform the economic outlook. With an immediate adoption of a broadband strategy the various stages of implementation should be carried out over the next 5 years.

Recommended stages:

Immediately	**Adoption of strategy**		
2002 - 2005	Wireless access	Rollout strategy (ongoing)	
			Undersea fibre connection to mainland
2006		Fibre to the home/office	

The most laborious and time-consuming aspect of the proposal is the laying of underground ducting and fibre. Once fibre is in place, termination equipment can be upgraded as need commands. The study undertaken predicts that the infrastructure proposed would continue to deliver gains for 20 to 30 years.

Stakeholders and Beneficiaries

Adoption of the above recommendations would elevate the Western Isles to be recognised as a location where two of the most important advantages of the Information Age could be combined:

- Φ   **"quality of life"** location
- Φ   **"high bandwidth"** connection to the international community

Being a highly marketable branding for "connected communities" these factors would enable us to attract inward migration and inward investment, by removing geographic boundaries.

The stakeholders and beneficiaries in this development would in the first instance be the main employers and service providers on the island, such as the Council, health board, education and local businesses. The local community will at this initial stage be a passive beneficiary, yet increased access to better and faster services will be developing. Following the successful completion of the programme the whole of the community will benefit actively from the proposed developments, with new opportunities e.g. in teleworking opening up.

Skills in the Information Age

It is equally important that the skills requirements that come with the Information Age are understood and met. Great time and expense has been devoted to giving people basic ICT skills to participate in the Information Age. However the report found that more specialised and refined skills need to be developed in potential employees of an IT-based economy.

The report has identified the following core skills as being of relevance to the requirements of the emerging new marketplace. Apart from their generic application as key transferable skills, they have to be understood in an online context of working:

- *Written & oral communication* (e-communication)
- *Team working* (e.g. online collaboration)
- *Problem solving*
- *Business awareness* (e.g. Web presence of companies)
- *Creativity & innovation* (e.g. possibilities of emerging software)
- *Inter-personal skills* (e.g. online team building)
- *Attitude & enthusiasm* (e.g. overcoming technophobia)
- *Technology skills* (e.g. emerging new technology)

Within the next 3 years there is estimated to be an ICT skills gap within the EU of approximately 1.7M persons. In terms of scheduling developments, specific training on the above topics is expected to show results within a very short timescale and can run in parallel with infrastructure development. Early embedding in the education structure, however, is essential.

It is not unreasonable to suggest that everyone gains from acquiring the recommended skills. Employers will find a high quality and productive workforce and potential employees will have acquired the skills which will ensure they are more marketable and have the capacity to increase their earning potential.

Monitoring & Review Policy

The fast rate of change in the technology sector means that a constant review of policy and changes to meet new requirements are an essential element of continued success. This is as much the case with telecommunications bandwidth as it is with skills requirements. It is therefore recommended that monitoring developments on an regional, national and international basis, as well as reviewing the adopted policy is conducted on an regular basis.

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The Future of Broadband Telecoms Provision in the Western Isles

A Desk Based Study
Broadband Telecoms Research Summary

The following section summarises the result of desk-based research and monitoring in the Broadband sector, assessing developing technology, understanding trends and relating them back to the context of the rural Western Isles. Some key areas of research into factors such as demand for broadband were out-with the scope of the study due to limited resources.

A desk based study assessing developing technology and trends in the Broadband sector and relating them back to the context of the Western Isles.

The report reviews the role of OFTEL and its policy framework in relation to the rollout of broadband provision to peripheral areas such as the Western Isles, noting the approach and policy applied in the US and comparing their approach with ours. It would appear that the US is several years ahead in its approach to recognising the need for broadband provision in their principle of Universal Service in rural areas. In the UK the current OFTEL regulations do not provide for the provision of Broadband services to rural areas.

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The report considers the key broadband technologies potentially applicable to an Island area such as the Western Isles.

In view of the costs, cable was considered to be an unrealistic option in relation to its level of service, compared to competing technologies. DSL, the new generation of broadband satellite, broadband wireless (licensed/unlicensed), 3G (Third Generation) mobile and fibre optic cable were ultimately settled upon for consideration, with the latter being the seemingly 'dream' solution. ISDN received only a fleeting mention, as a good example of a seemingly advanced interim technology, which never achieved full market penetration. ISDN will however, remain a useful, although limited, service option for some time.

DSL, the new generation of broadband satellite, broadband wireless, 3G mobile and fibre optic cable were ultimately settled upon for consideration, with the latter being the seemingly 'dream' solution.

ISDN received a fleeting mention; it was a good example of an advanced interim technology that never achieved full market penetration.

3G mobile and broadband satellite will inevitably be rolled out in our broadband future. All-inclusive coverage remains an issue in sparsely populated areas, particularly with regard to 3G mobile services. The nature of the level of service and its applicability to our broadband future remains unanswered at present.

ISDN will however, remain a useful, although limited service option for some time.

Consideration of (A)DSL raised many issues which would need to be dealt with regarding the capacity and ability of the existing exchange and copper infrastructure network

in the Islands to enable its rollout. While ADSL technology was considered to be less than optimal, as it would not be able to achieve radical and lasting change in the development of the islands, innovative partnerships utilising variant xDSL technology could still provide potential.

Broadband Wireless Access was identified as being a cost effective solution with a relatively short rollout timescale. Examples of successes elsewhere in both urban and rural areas across the globe were highlighted and several differing models in the licensed and unlicensed bands examined. The current licensing situation in the UK was reviewed as was the developing technology. An innovative build-out through public/private and even community partnerships was considered possible. There appeared to be some mileage as an area of further research and testing, although it was concluded that an all-inclusive service would be an interim solution in the longer term in our digital future.

The early adoption of a fibre optic network was identified as being the key to deliver lasting and radical, social and economic change in the Western Isles for the 21st century.

As the study progressed, the increasing magnitude of the economic and social development attainable by the rollout of the appropriate broadband solution for a remote rural area such as the Western Isles became increasingly apparent. In addition, the potential development gains from the early adoption of a long-term Information Society enabling infrastructure, became increasingly clear. In this respect, fibre-to-the-home/fibre-to-the-business was shown to be the 'killer' broadband solution capable of instigating lasting and radical social and economic change in the Western Isles of Scotland. With costs falling to being on par with replacement copper or ADSL rollout a key development opportunity appears to have presented itself. Other telecoms operators in the US faced with similarly ageing telecoms infrastructure not able to provide broadband services without upgrading, have instead migrated direct to replacement fibre. An opportunity for an innovative fibre-development partnership, with initial costs perhaps being borne by the public sector to key locations Islands-wide appears to have much scope.

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Broadband Wireless Access - a cost effective solution with a relatively short rollout timescale.

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Telecoms operators in the US faced with similarly ageing telecoms infrastructure not able to provide broadband services without upgrading have instead migrated direct to replacement fibre.

Additionally, the Western Isles should link into the main trunk services in mainland Scotland via undersea fibre optic cable.

At least one other local authority has already made such a policy decision relating to the laying of ducting in all new developments and upgrading/repair works undertaken throughout their Islands. As stated above, investigations into existing infrastructure and the opportunities it presents are recommended and a series of pilot projects to strategic points in the Islands presents an obvious opportunity for progress. Iomairt Nis, Garenin Village, Uig Community Centre, The National Gaelic Resource Centre in Lochs, The Harris Genealogy Centre, The FE Centre in the Uists, Barra Learning Centre and a range of other key public sector service provision sites, in addition to Stornoway could all be feasibly targeted for broadband fibre. A second phase could then enable a build out into surrounding communities and ensure equitable access to all residents and businesses in the Western Isles. Digital inclusion is a key aim of any broadband rollout.

Undersea fibre optic cable to the mainland and between the islands was considered an essential progression towards long-term connectivity requirements of future generations.

There can be little doubt that such a radical and innovative approach to economic and social development via broadband provision would provide enormous marketing opportunities upon which to attract inward investment and stimulate re-population and new enterprise. Taken together with a series of opportunities that the writer termed 'the holy grail' of rural development, with the Islands achieving a profile in the broadband sector similar to that of Skye in the Tourism sector, would be achievable. Finally, it was noted that the timing of the report was opportune, given recent discussions and encouragement at the regional level for a radical approach to rural development to be pursued within the Western Isles.

The early adoption of a fibre optic network was identified as being the key to deliver lasting and radical, social and economic change in the Western Isles for the 21st century.

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The timing of the report is opportune with encouragement at the regional level for a radical approach to rural development to be pursued within the Western Isles.

Broadband Telecoms Conclusions

To many at this time, the importance of establishing this vision might not be clear. However, what is clear from the research, which has cumulated in the formulation of this report, is the immense development potential looming just over the horizon in both economic and social/community terms.

Continued economic stagnation and population decline are issues which the author discusses everyday with people from all differing backgrounds throughout the Highlands & Islands. In doing so the writer is aware of, arguably, the current development paradigm of conservatism and consolidation and the conventional wisdom of diversification. It requires a strong vision and a belief in the future to bring about change, both social and economic. Development is about long term quality of life gains and sustainability rather than short term materialistic gain and it is the former that a realisable broadband future for the Western Isles could without doubt bring, although this may not be immediately obvious to many.

Children from an earlier age are becoming part of the digital information society, often before their parents. What will retain children in years to come in remote Islands like ours? – not just the quality of life, but also the opportunity to earn income in line with their aspirations and attain services from this future broadband society in their home area. A key policy decision now could reverse youthful out-migration within 5 years, lead to re-population and attract significant publicity, awareness and inward investment. Such new broadband opportunities have also been shown to raise average incomes significantly, as new opportunities are realised

Broadband will be the new enabling communications infrastructure for economic development in rural areas, just as roads, bridges, ferry and air services were in the last century. Upon this realisation, the significance of our route to our inevitable broadband future becomes realised. In market terms the Western Isles are always going to be at a competitive disadvantage in our current development paradigm. If we can break free from this harness, and combine the potential new opportunities realisable from broadband with the unique quality of Island life on offer, then we could conceivably become a high technology rural development zone.

The increasing pace of development is unrelenting in the technology and communications field, meaning that any interim investments made will never become available mass market, before being abandoned - e.g. ISDN. Such a cycle of catch-up may even prove to be depressingly unrelenting in the years to

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come and do nothing to address economic stagnation, as new adopter sites increasingly take a higher share of the spoils. As the soon to be published Ovum 'Broadband Network Infrastructure in the Highlands & Islands' report states: "*In the long-term (10 years+) fibre to the building will become the main access technology. This change will take longest in rural areas where the distances and hence cost of laying new fibre will be the greatest.*" No doubt the 'change' will take even longer in remote island communities off the North Coast of Scotland if we do not grasp the current opportunity now.

The conclusions from such analysis are surprisingly clear and were certainly not anticipated. A synthesis of the information gathered to date, points directly at fibre optic cable as being the key enabling technology.

It is paramount for the Western Isles to future-proof any investment undertaken. Investment in leading edge technology now will give us an economic advantage for the first time in decades. We need to jump a generation, just like many of the WAP-3G telecoms suppliers are already doing, cutting out the cost of interim solutions, which will never prove economic or reach mass-market status, because of the next generation arriving so quickly.

Contrary to popular belief, it is rural customers (because of the ageing infrastructure faced by telcos and its need to be upgraded) in the US that have been named as being the driving force behind many fibre deployments by telecom suppliers.

Evidence from case studies suggests that one could make the case that fibre is the most cost effective solution in the long term. Not only because it has come down in price to the cost of copper installations, but because of the added social and economic value which could be realised. Conversely, any of the other solutions would need to account from the opportunity cost of not providing cutting-edge fibre services.

It would be very easy to conclude, that a 'diversified' range of the interim broadband solutions will be the best, most suitable and most likely for the Islands. To achieve this in a reasonable timeframe, one could envisage the need for numerous public sector incentives for various suppliers and operators of varying descriptions. In such a scenario, the chance of realising a radical and lasting shift in the Islands fortunes will be gone.

The conclusions and vision outlined above however, are unambiguous. Accepting the analysis provided then, begs the question how do we get where we want to be going?

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A synthesis of the information gathered to date, points directly at fibre optic cable as being the key enabling technology for a number of reasons.

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It is rural customers in the US that have been named as being the driving force behind many fibre deployments by telecom suppliers.

One could make the case that fibre is the most cost effective solution in the long term.

A 'diversified' range of the interim broadband solutions will not be ideal for the Islands. In such a scenario, the chance of realising a radical and lasting shift in the islands fortunes will be gone.

Broadband Telecoms Recommendations

- *There needs to be a subscription to the principle of the vision outlined above by the development agencies at the local level, right up to the national level. The recommendation is that any further works related to digging up roads, pavements, new builds…etc in communities around the Western Isles, will incorporate the laying of ducting cable as a matter of procedure. This level of commitment from the development agencies will be an early way in which any future vision can be worked towards. Assessments of existing opportunities (e.g. via the sewage pipe infrastructure) and potential for cost effective rollout would also need to be examined.*

- A full cost/benefit analysis would need to be commissioned to provide the basis on which to build the vision for a 'connected community' strategy, this in effect, being the catalyst for the ensuing development process.

- There needs to be a multi-agency development partnership set up at the highest level, including local, regional and national and perhaps even international interests from both the private and public sectors. A commitment from the public sector to upgrade its links throughout the Islands may be the necessary catalyst for the private sector to build-out broadband into adjoining communities e.g. CnES making a policy decision to link its offices throughout the Islands by broadband fibre, or UHI its outreach centres.

- *The opportunities of an undersea fibre link requires consideration.*

- A wide ranging financial assessment would need to be undertaken to assess the level of incentive required, and consequently assess the timeframe under which development could take place.

- Broadband wireless could without doubt be rolled-out on a much shorter timescale and is the most 'suitable' interim technology and appears to be an additional area worthy of additional consideration.

This will mean that any further works related to digging up roads, pavements, new builds… etc in communities around the Western Isles, will incorporate the laying of ducting cable as a matter of procedure.

A full cost/benefit analysis would need to be commissioned to build the vision and identify clearly the goals achievable.

There needs to be a multi-agency development partnership set up at the highest level - local, regional and national and even international interests from both the private and public sectors.

The opportunities of an undersea fibre link also requires consideration.

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A Final Overview

There now appears to be a genuine willingness at regional and national levels to stimulate long-term sustainable economic development in the Western Isles.

As one Californian community put it, 'broadband fibre will provide a lasting legacy for our children'. Sustainability requires that we consider not just this generation, but also the next. If one accepts that the ICT revolution currently happening is on a par with the agricultural and industrial ones of our past then we must, with this single key opportunity, invest in the correct network infrastructure which will not only look after our present needs, but also that of the next generation. Time and community concepts also become a factor and if we are to build out a broadband infrastructure now it must also serve the needs of the future - 20-30 years from now. Fibre-based infrastructure is thus the clear choice.

It is surely time that a long imagined visualisation of a 'connected community' in the Western Isles was established, benefiting the whole community, having long lasting significant economic and social impacts, thus achieving and indeed going beyond the present government's aim of rural social and economic inclusion in the digital broadband information age. In development terms there is surely no competing opportunity awaiting to be exploited. The current internet revolution and associated convergence technology and the resulting effect on society is surely of a magnitude never again to be experienced by our current generation.

It is time that a long imagined visualisation of a 'connected community' in the Western Isles was established benefiting the whole community, and having long lasting significant economic and social impacts.

The current internet revolution and associated convergence technology and the resulting effect on society is surely of a magnitude never again to be experienced by our current generation.

As Mark Macdonald, Marconi Communications, Irving Texas states:

"Arriving first to market with an assortment of current and futuristic multitechnology services is a business strategy that offers whopping revenue potential. The attraction for service providers to offer a mix of video, voice, and data services to an ever-growing customer base is that they can double or triple their revenues within a very short period of time…To be poised for the future and sustain success, the reality is that service providers may need to upgrade their networks sooner rather than later. Deploying a powerful, highly scalable technology platform capable of supporting unlimited amounts of bandwidth will give those willing to make the investment to meet demand, a rich selection of next-generation services and applications.

The attraction for service providers to offer a mix of video, voice, and data services to an ever-growing customer base is that they can double or triple their revenues within a very short period of time… the reality is that service providers may need to upgrade their networks sooner rather than later.

Whether it's fibre-to-the-curb (FTTC), fibre-to-the-home (FTTH), or fibre-to-the-office, this long-awaited technology is clearly built for the needs of the 21st century. A fibre-based solution enables service providers to deliver in-demand, bandwidth-intensive communications services and add these services to a growing list of offerings at breakneck speed."

Whether it's fibre-to-the-curb, fibre-to-the-home, or fibre-to-the-office, this long-awaited technology is clearly built for the needs of the 21st century.

Teleworking & Outsourcing, Europe's New Economy & the Western Isles

Given the preceding discussion and overview, what are the key opportunities related to teleworking, outsourcing and new ways of working developing in Europe and the UK of relevance to the Western Isles?

It is essential that we understand the areas of developing opportunity within the EU economy (in the first instance) which can be exploited using ICT, in order to be able to identify the types of skills that are going to be in high demand several years from now.

In summary, drawing on the European experience to date we can immediately identify several areas of opportunity of relevance to the Western Isles:

- The development of virtual teams of skilled teleworkers, with a web presence and a track record appears to be a clear opportunity for development. The local public sector could be utilised to help establish credible and relevant track records for such teams.

- The parallel development of on-line course and module delivery (via UHI) in the core skills demanded, has been shown to be of significant benefit to other rural areas. eg European Computer Driving License (ECDL)

- The provision and availability of past contracts specifications/agreements for scrutiny by potential business providers needs to be progressed, to convince and satisfy middle-management that such out-sourcing contracts have been shown to work successfully in the past. The availability of real examples which can be quoted and from which testimonies can be secured is also of key importance.

- The provision of a commercial consultancy service to aid structural change in urban areas, with set targets for the securing of outsourced contracts to rural areas (i.e. the Western Isles) would also appear to have some potential to assist teleworking development.

- Opportunity for a parallel service to provide national free phone advisory service for teleworking enquiries for both business and teleworkers and website. Also initiative based on business breakfast for key businesses has already been piloted successfully elsewhere.

- Promotional campaign to highlight the 'cool' of rural satellite offices within new economy sector – A statement of progress – *'we have the technology know-how to even run an integrated office from the Outer Hebrides of Scotland'*. Opportunity for unique team building events in rural context from beach

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Promotional campaign to highlight the 'cool' of rural satellite offices within new economy sector.

barbecues to orienteering events. New ways of working pilot projects, projection of positive image to customers…etc

- Parallel campaign to promote Islands as a perfect location for re-locating teleworkers, to bring new skills into the area along with new contacts and possibly employment.

- Highlight Swedish & Danish examples to The Scottish Parliament - of forward thinking in action which is as committed to broadband in rural areas as in urban centres.

- Opportunities for skills development to mature in-line with growth in outsourced customer service centres (call centres) to provide new level of communication, inter-personal and foreign language skills, in addition to key ICT skills.

- Teleworking initiatives in areas such as the Western Isles require to capitalise on both public sector and market momentum to lever in both investment and jobs. In the view of the author, it may take a proactive decision by the public sector in the Western Isles in the first instance to give new teleworking initiatives a track record and therefore a competitive foothold in a burgeoning growth sector.

As already stated, it is going to take a proactive public/private partnership to be the catalyst for the types of development discussed to date. An idea of possible funding priorities in this sector was provided in 1998 when the EU allocated funding to 'Telework Conversion Projects' throughout Europe, with the following funding breakdown: 50% of funding for equipment and infrastructure 30% to business process re-engineering and 20% to education.

In conclusion, it is very much the view of the writer, given the above case studies and their relevance to development in the Western Isles teleworking context that a real opportunity exists in this sector. In the new economy, outsourcing - be it to call centres or individual teleworkers or indeed teleworker teams - will generate significant new activities in non-traditional non-urban locations for business and commerce. The rural Western Isles may have an opportunity to secure such business, given the appropriate skills base and key infrastructure discussed in Section 1. The specific skills demanded are already becoming apparent as one browses the emergent number of freelance and e-lance websites being rapidly developed.

It is no surprise that the most heavily subscribed FE and HE courses in the Western Isles are in the computing field. The change is taking place in education, as demanded by the public, but there is a worrying lack of realisation of how we will begin to meet the economic development needs of future, now.

ICT & Associated Skills Requirements

Parallel campaign to promote Islands as a perfect location for re-locating teleworkers, to bring new skills into the area along with new contacts and possibly employment.

Opportunities for skills to mature in line with growth in outsourced customer service centres to provide new level of communication, inter-personal and language skills, in addition to key ICT skills.

It is going to take a proactive public/private partnership to be the catalyst for the types of development discussed to date.

A real opportunity exists in outsourcing, - be it to call centres or individual teleworkers or indeed teleworker teams - will generate significant new activities in non-traditional non-urban locations for business and commerce.

Research Summary, Conclusions & Recommendations

It is clear that as the EU ICT skills gap develops, outsourcing is increasingly becoming a necessity for many firms and industries in the UK and beyond. Recruitment is becoming difficult and staff turnover and wages high as firms compete for key members of staff, with many posts remaining unfilled for many months. As suggested by EU policy makers the development of public/private training partnerships to target resources at key areas of current and advance need would appear to be key requirement for 'best practice' initiatives. Public sector investment can be maximised and SME opportunities realised as ICT-related staffing constraints are negated and new distance learning opportunities become deliverable via broadband to rural Island communities.

More fibre-connected people-centred workspaces (customer service centres) need to be created as new ways of working are adopted to meet the needs of all flexible workers in the new economy for which our Islands need to be renowned. Futuristic thinking which our European counterparts are already adopting. What is termed **fun**ctional offices with a different feel from that of the conventional workplace need to be developed to cater for all e.g. including crèches, cafes, jazzy colour schemes, casual dress codes…etc to attract (young) employees and increase productivity. Experience in Ireland points to the need for multi-lingual employees as being a major selling point in itself and an area of increasing demand. It needs to be recognised that only 10% of UK workforce is involved in telework at present, whilst this number is close to 20% in Finland.

There is much anticipated scope for development in this sector, as witnessed by the recent development of e-lance websites with literally 1000s of jobs for teleworkers with the right mix of skills. The Western Isles already has a recognised track record in this area and needs to exploit it, providing we can get this skill mix correct. Initially the local public sector may assist giving newly trained workers the all-important track record.

With the Customer Service Centre market growing at 40% per annum, there needs to be an increasing recruitment drive targeted at school leavers offering desirable working conditions and incentives to earn money and advance their education via sponsored employee schemes for example.

With regard to the Island's move toward the new economy, it will not be acceptable to wait for demand-led initiatives to trigger investment. The more progressive areas in Europe have already considered the folly of this in the new Information Age, where it has been recognised that those most appropriately geared-up will attract most of the demand-side activity and

As the EU ICT skills gap develops, outsourcing is increasingly becoming a necessity for many firms and industries in the UK. Recruitment is becoming difficult and staff turnover and wages high with many posts remaining unfilled for many months.

More fibre-connected people-centred workspaces need to be created.

Experience in Ireland points to the need for multi-lingual employees as being a major selling point. It needs to be recognised that only 10% of UK workforce is involved in telework at present, this number is close to 20% in Finland.

It will not be acceptable to wait for demand-led initiatives to trigger investment … those most appropriately geared-up will attract most of the demand-side activity and investment at the expense of the areas that opt to 'wait and see'.

investment at the expense of the areas which opt to 'wait and see'.

As no one can confidently predict where this new revolution is going, the postponement of investment until the market settles is not a legitimate development policy. One must be part of the revolution if one is to gain the advantage and opportunity associated with it.

As Business to Business (b2b) competition increases via e-commerce enabled transactions that will be distance independent and reduce supply cost significantly for e-commerce enabled SMEs in the Islands there are both threats and opportunities. Non-e-commerce SMEs in the region will find their products and services being replaced by those that are, by an efficiency-seeking commercial market. Yet for those that take the leap of faith, an increasingly global marketplace (b2b and b2c – Business to Consumer) will be on their doorstep and new opportunities abundant. Obviously ICT skills and appropriate telecoms will require to be developed throughout the Islands area, to enable this transformation. In the view of the writer this is therefore not an option but rather an immediate necessity.

With regard to the specific skills necessary in the Information Age, a number of sources have been quoted within the text which largely agree on the generic content required:

Specific skills necessary – a number of sources have been quoted within the text which largely agree on the generic content required:

- Written & oral communications
- Team working
- Problem solving
- Business awareness
- Creativity & Innovation
- Inter-personal skills
- Attitude & Enthusiasm
- Technology skills

The relatively low priority given to technology skills should be noted, which in many instances were viewed as being less important to the ICT sector. There appears to be a pervasive view within the sector that if the key generic skills can be attained then the ICT skills can be developed in-house. In all but the most technical of posts, such feedback appeared to be commonplace.

Low priority given to technology skills – viewed as being less important to the ICT sector than business and customer service skills.

Language, Science and mathematics along with specific ICT skills were viewed as being important, although the range of the above generic skills was still sought after. In almost all instances previous work experience was a stated preference

Language, science & mathematics along with specific ICT skills were viewed as being important.

and again there may be a role for the local public sector to aid this transition initially.

Appreciation of such findings need to be incorporated into an Islands-wide Information Age Skills Development strategy, incorporating an awareness-raising initiative for non-ICT graduates and employees within the area, similar to that of project Gemini in South-East England.

Findings need to be incorporated into an Islands-wide Information Age Skills Development strategy.

An opportunity to deliver core skills online via outreach centres combined with added-value SME integrated workspace would appear a real prospect with linkages to other national initiatives such as the NGfL and SufI's 'Learndirect' initiative.

An opportunity exists to focus on in-demand ICT skills to plug the developing skills gap and encourage specialist teleworking and outsourcing teams to become established. Such specific ICT skills outlined within the report combined with the appropriate generic skills will potentially provide the catalyst to enable a transition in the Western Isles workforce to one compatible and in-demand within the new 'Digital' economy. A pilot project targeted at those individuals on the ICT skills register and school leavers could be progressed.

Focus on in-demand ICT skills to plug the developing skills gap and encourage specialist teleworking and outsourcing teams to become established.

Again, it is here that an ICT skills/training partnership between the education sector, industry and the public sector will identify clearly the needs, opportunities and delivery options to integrate the Island's population into the Information Age and respond dynamically to future trends. Such initiative has already been shown to be profitable in the examples outlined within the main text.

There is a clear policy framework in which to develop the Western Isles' skills development response to the Information Age. This policy is integral to the advancement of the broadband telecommunications recommendations made earlier. There is an obvious synergy between the two key areas considered in this report. The commitment at the EU, national and regional policy levels which focus on 'skills for the information age' recognise some of the infrastructural requirements for delivery and have associated funding for such development. A dual development approach can therefore achieve cost savings by combining the financial allocations for both skills and broadband rollout by encouraging the facilitation of an all-encompassing partnership approach at the local level to integrate the Islands into the Information Age.

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