Irish Academy of Engineering

Irish Academy of Engineering's Response to The National Broadband Plan Ireland's Broadband Intervention Strategy

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2 Introduction

(i) The Irish Academy of Engineering (IAE) is an all-island, independent body, concerned with long-term issues where the engineering profession can make a unique contribution to economic, social and technological development.

(ii) The Academy has a taskforce currently reviewing the provision of Broadband services in Ireland, in the context of the development of the National Broadband Plan (2015). The taskforce will shortly issue their findings in the form of a Policy Advisory, the aim of which will be to inform, influence and assist government decision makers in their development of policies in respect of the provision of high speed Broadband services nationally.

(iii) In advance of the publication of their Policy Advisory the Academy's comments hereafter are in response to the Department of Communications, Energy and National Resources NBP Intervention Strategy Consultation process. None of our comments are considered confidential nor commercially sensitive and may be released in any public document.

3 Purpose of this public consultation

(i) To elicit the comments of all interested parties in the field before finalising the proposed Intervention Strategy and its implementation.

(ii) The Academy has no commercial involvements nor interests in broadband services in Ireland. It does however recognise its vital importance to the economic development of the nation and our international competitiveness.

(iii) The Academy, drawing on the wide experience of its membership, have established a taskforce drawn from experts in the field, involved in the planning, design, provision, use and management of broadband services, who are developing the aforementioned Policy Advisory and have contributed to the response.

4 Background

(i) Comments are made in the context of the National Broadband Plan for Ireland, which followed the findings of the Next Generation Broadband Taskforce, the recently published National Broadband Strategy – Intervention Strategy (PwC 15.07.15) and DCENR conducted mapping exercise which identified areas of the country where high speed broadband is not available now nor expected to be available in the near future (i.e. the "Intervention Area").

(ii) The IAE are currently preparing a report on the development of a new National Spatial Planning Strategy. Within that study it has become clear that the absence of a high speed broadband service in many parts of the country is a serious infrastructural deficit, militating against economic and social development. Hence the IAE established a taskforce to examine how the provision of service may be improved and the rapidly increasing digital divide between urban and rural areas may best be addressed.

5 Vision - High speed broadband to all

(i) The intervention Strategy Report recommends minimum targets for all users of download speeds of 30Mbps and upload speeds of 6Mbps. This we contend will not meet the current needs of many SMEs and home owners.

(ii) The IAE recommend ambitious "stretched targets" where physically, technically and economically possible, of 1Gbps to homes and 10Gbps to business, to be considered as a means of future proofing a high performance, connected society and a resilient, robust national network. These are based on typical broadband speed application, as follows:-

Upload & Download Speed Range	Online Application Example
500Kbps - 1Mbps	Email; Voice over IP (VoIP)
1Mbps - 5Mbps	Web browsing; Streaming music
5Mbps - 10Mbps	Telecommuting; Remote education
10Mbps - 100Mbps	Telemedicine; Educational Services
100Mbps - 1Gbps	High Definition (HD) Telemedicine
1Gbps - 10Gbps	Remote Super Computing; eGovernment: Telemedicine delivery
10Gbps - 100Gbps	"Big Science" applications; Modern Data Centres

(iii) The comparator models should be more technology orientated EU member states of northern Europe not withstanding their population densities being much lower than Ireland's.

(iv) A peripheral nation such as Ireland, with an open export orientated market, needs technological and economic comparative advantages, plus every attractor possible for inward investment. Hence the recommendation for stretched targets to enhance our international competitiveness.

(v) Long term planning and benefits must underpin the provision of what will be in effect a national utility, on par with the national electricity network, gas and sanitary services utilities, all of whose provision must be viewed as "nation building".

(vi) In that context the recently announced initiatives by the ESB-Vodafone JV ("Siro") and that of Eir (formerly Eircom), to develop high speed fibre networks nationally, are to be welcomed.

6 Who will benefit?

(i) Obviously every remaining unconnected home and business in the country – no matter how remote, as per the objective set out in Section 3.2 of the PwC report. Likewise for schools, libraries, Garda Stations and Government offices in the non-urban areas.

(ii) Local area operators who will be able to compete with the bigger operators in an open and transparent market, provided they are facilitated in migrating from radio based operations, which are reaching their potential limits.

(iii) New services and applications that will emerge to take advantage of the extended high speed coverage in the intervention areas, as have already done so in the urban centres.

(iv) Content providers who will expand their services to meet the inevitable demand from the higher speed capacities, as they become available in the intervention areas.

(v) Education, tourism, SME's and Agriculture's productivity and access to markets.

(vi) Improvement of social cohesion, participation and inclusion by closing the "digital divide".

(vii) Construction industry during implementation and thereafter operations and maintenance services operators.

7 Key elements of the proposed intervention strategy

7.1 The intervention area

(i) The DCENR's High Speed Broadband Map and public consultation are to be commended. Notwithstanding access to an interactive version of the map at www.broadband.gov.ie, its existence and worth should be more widely and actively promoted to the public, businesses, small ISPs, other State Departments and State Sponsored bodies.

(ii) The intervention area, at 96% of the landmass of Ireland indicates a challenge on par with the ESB's Rural Electrification Programme, which took up to 20 years and at peak employed over 5,000 persons. We do not have the luxury of that timescale now.

(iii) It is not clear from PwC report as to whether or not cross-border cooperation is envisaged with the Northern Ireland authorities for service provision in the border counties' areas. There must be economies to be achieved by such cooperation.

(iv) It is assumed that the inhabited off shore islands are included in the intervention area.

7 Key elements of the proposed intervention strategy

7.2 High speed broadband - definition of services

(i) The desired objectives of the intervention strategy have been commented upon previously.

(ii) The seeming over dependence on radio services to deliver the "last mile" is fraught with concerns as to its ability to scale to meet future needs, due to the Claude-Shannon Theorem Limits (e.g. LTE-A takes us close to theoretical limits and will manage at most about 4 bits/Hz for real outdoor line of sight deployment). 100% coverage cannot be delivered due to terrain, tree coverage and site availability.

(iii) A fibre based "last mile" is an infrastructure that can scale to meet future demand. Conceivably for some locations a fibre based "last mile" may initially be back hauled by licenced wireless infrastructure (e.g. off shore islands).

(iv) Ensures that all State, State Sponsored bodies and Public Services current fibre assets are placed into productive use or at least are available for productive use, combined with measures to bring our Metro and national dark fibre pricing into line with well regulated, competitive EU markets.

(v) Rectify the current situation where in Region rates (e.g. MAN to MAN) are often more expensive than national rates, due to lack of competition on these routes and the regulatory environment under which Eircom operates.

(vi) Improved management, inspection and transparency are needed to addresses weaknesses in the Irish regulatory regime, as is the urgent necessity to address the perceived dysfunctional state of the wholesale market.

[Note: Intervention Area Strategy Report (15.07.15) does not address national transit issues]

7 Key elements of the proposed intervention strategy

7.3 Characteristics of the network

(i) As with any utility network it must have:-

- Fibre based, wherever feasible technically, at least cost.
- Fitness for purpose through robust design.
- Capacity for future scaling up.
- Stable, reliable operation.
- High levels of interconnectivity (internal & international).
- High levels of resilience and redundancy.
- Open architecture/technology neutral.
- Regulated fair and competitive entry and access conditions, transparent to all interested parties.
- Standardised format with common access and operating protocols.
- Competitively priced when compared with international competitors.

7 Key elements of the proposed intervention strategy

7.4 Who will own the network?

(i) The experience to date in Ireland suggest that the country has been poorly serviced by an incumbent who owned the old copper telephony network. Furthermore if the same organisation that owns the bulk of the back-haul network is competing in a market with its own customers, there will be unavoidable conflicts of interest.

(ii) Thus the IAE favours a State Sponsored body being invested with a controlling ownership share of the proposed national network asset to be provided for the intervention area and any possible transfer thereto of existing assets from State, State Sponsored and Public Services bodies. These assets are strategically important for the nation's socio –economic welfare and development. The model of the national electricity grid, UK rail network and Scottish Water, where the underlying, nationally important, strategic asset remains in public ownership, would serve to avoid conflicts of interest.

(iii) There is a strong case to be made that Ireland is too small to have competing passive infrastructures. An alternative model of a single cost effective first class open access carrier neutral network (Netco) could optimise coverage while creating synergies. This model could support, facilitate and encourage strong competition at the service level allowing operators to compete on the basis of innovative, high performance, cost competitive next generation telecom products and services. A single infrastructure network would achieve significant synergies thereby reducing operating costs. Effectively this new entity Netco would be a robustly and vigorously regulated monopoly, attractive to sources of long term capital and capable of leveraging infrastructure funds.

(iv) The mechanisms for the Procurement, management, operation and maintenance of the network are a choice for Government, obviously based on the principals set out in Section 9.1 of the PwC Report, particularly the requirement for being "technology neutral".

7 Key elements of the proposed intervention strategy

7.5 How the network build will be funded

(i) The funding models reviewed in Section 11 of the PwC Report, its recommendations as to the preferred model (No.3) and potential sources of funding would not preclude the Academy's comment under 7.4(ii) above.

7 Key elements of the proposed intervention strategy

7.6 Procurement

(i) Other than the necessity for more ambitious "stretched targets", potential for future scaling, resilience, interconnectivity and less reliance on wireless for the "last mile", previously commented on in 5 and 7.3, the Academy have no further comments on this subject.

7 Key elements of the proposed intervention strategy

7.7 Ensuring that the network delivers

(i) The measures outlined in Section 8 are sound, but retaining full state ownership of the asset is highlighted as being costly. The Academy believes that this remains the best option for ensuring delivery of a fit for purpose system.

(ii) Should funding constraints preclude a full state ownership we are satisfied that flexibility in the funding model deployed and contract architectures for both the implementation and operation phases can be so constructed as to achieve the same objective.

(iii) It may be argued that the supervision/management/governance costs may be increased by such an approach, but this intervention area network will be a strategically vital part of the national infrastructure. As such it warrants the consideration of the establishment of an independent, lean body to ensure its delivery and in turn a best international standard delivery of service.

7 Key elements of the proposed intervention strategy

7.8 Key features of the wholesale network

(i) It is not clear why wholesale charges in Ireland are so far adrift of comparable European charges (by up to multiples of 40+ times in places). This is indicative of some dysfunction in the existing market and our current regulatory regime. The matter is further compounded by a lack of transparency in the market.

(ii) These issues must be addressed urgently, to prevent a repetition in the intervention area.

(iii) In the absence of a more vigorous and open regulatory regime, the independent body suggested by 7.7(iii) may be charged with providing inexpensive access to the State owned fibre-network asset, to as many organisations as possible, ensuring maximum utilisation, without trying to sell direct to the "end user".

7 Key elements of the proposed intervention strategy

7.9 Time frames for rollout of the network

(i) The timescales set out in Section 13 seem reasonable, but as an incentive to shorten these, stated additional awards points in the marking system, as part of bid selection process, should be made known to bidders, for every quarter year earlier that the network can be delivered by them.

7 Key elements of the proposed intervention strategy

7.10 Time frames for connecting premises

(i) The proposal to progressively extend coverage, before the completion of the network is welcomed.

(ii) A similar awards incentive, as proposed in 7.9(i), could equally apply here.

7 Key elements of the proposed intervention strategy

7.11 Connecting consumers - existing and new premises

(i) No discrimination should apply between old and new.

(ii) The Planning Authorities should be requested to ensure that wherever possible all new planning applications approved should provide for fibre to home and business premises connections (as for power and sanitary services).

7 Key elements of the proposed intervention strategy

7.12 Availability of services

(i) There are no objections to the proposals contained in Section 5 of the PwC Report, other than again to advise against discrimination in the provision of services to new and existing premises.

7 Key elements of the proposed intervention strategy

7.13 Demand measures

(i) To date demand led planning does not seem to have made sufficient account for content provision future growths.

(ii) Discussion with some content providers indicates a voracious future capacity requirement, with a ready uptake by the public and business. The smart phone applications market is a good example of the speed of uptake growth, over a few short years, that should be planned for any new network.

(iii) Thus before irrevocably committing to the relatively unambitious targets now being proposed, an extensive consultation with the major content providers would prove useful. We have no doubt that it will confirm the Academy's advice to be more ambitious in our national targets.