Response to the

Department of the Environment, Climate and Communications

International Connectivity for Telecommunications

Public Consultation

27th November 2020

Introduction

DeepSea Fibre Networks Ltd. have been invited to provide a response to the Department of the Environment, Climate and Communications *International Connectivity for Telecommunications Public Consultation, October 2020.*

The below response is set out to answer the Questions of Section 4 of the Public Consultation document.

Please note that some information has been marked as confidential (shaded in yellow). All such information must be redacted if this document is to be published or otherwise made available to the public.

Question 1

"Is there sufficient capacity and diversity of routes available to meet current and future demand over the next 5 years (or over a longer timeframe if that information is available)?"

Please provide current capacity of international links (in absolute terms and percentage of fibre cable used / free at present) and plans for future capacity over the next 5 years (or over a longer timeframe if available).

Response 1

Ireland's international connectivity can be considered in three distinctive categories as follows;

1. Ireland - UK
2. Ireland - US
3. Ireland - Europe

In considering these three categories the response below focuses primarily on the newer systems as many of the legacy, 1996-2001, systems are nearing end of life and will almost certainly be end of life in the next 5 years.

1. <u>Ireland - UK</u>

We consider Ireland to be well served in terms of connectivity to the UK. The diagram and table below detail all the relevant and proposed systems together with an estimate of capacity available. As there is a robust, competitive, open access sub-sea dark fibre market in place it is considered that Ireland - UK connectivity is adequately supported now and for at least the next 10 years, both in terms of capacity and diversity of routes.

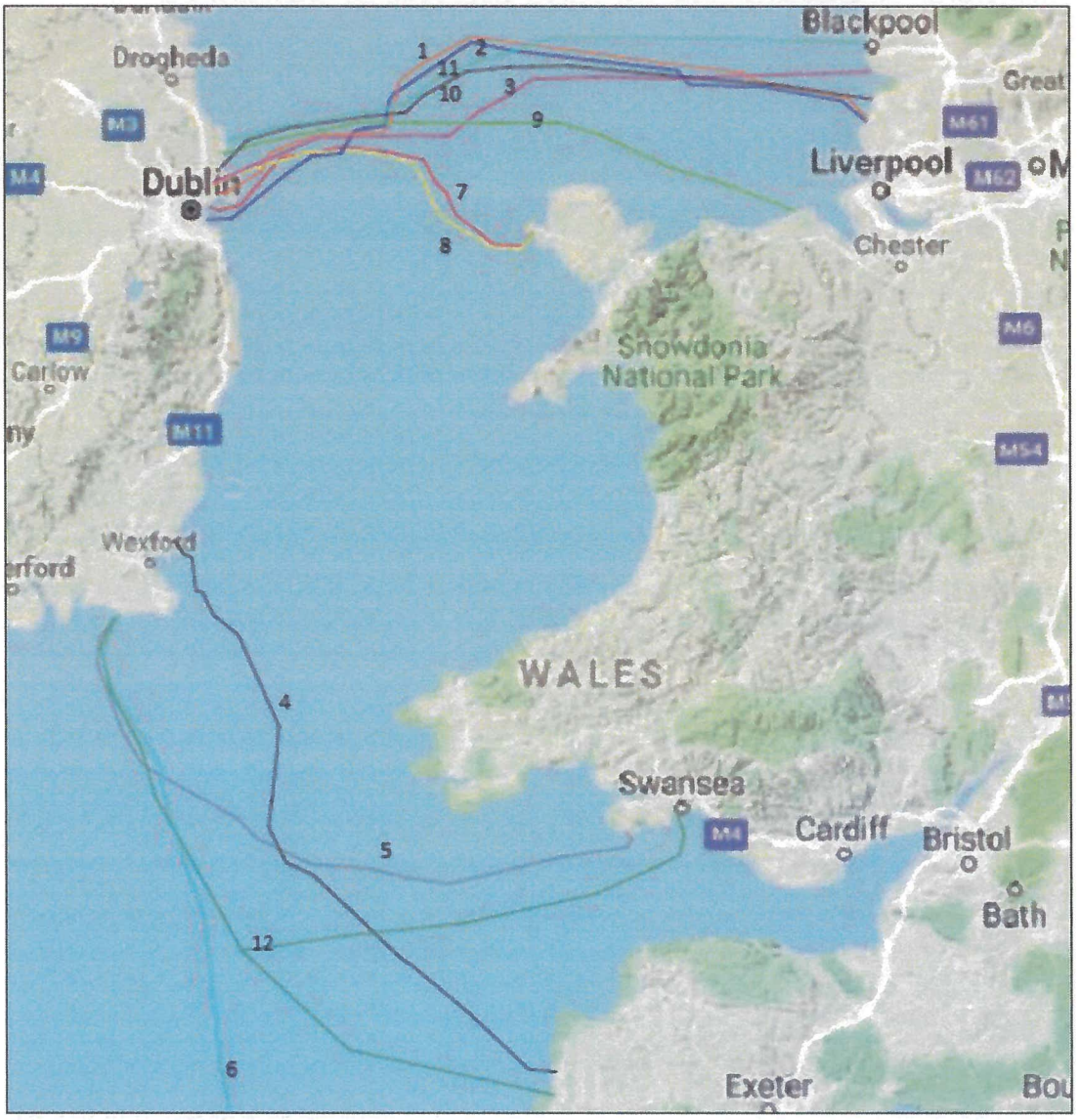

Figure 1 ***Irish Sea Cables***

No.	ID	Sub Sea Cable	Year Installed	Fibre Count	In Use (Estimate)	Available (Estimate)
1		Hibernia Seg C	2001			
2		ESAT 2	1999			
3		Sirus South	2000			
4		Global Crossing 2	2000			
5		Solas	2000			
6		Global Crossing 1	2000			
7		Celtix Connect 1	2011			
8		EBFL	2013			
9		Eirgrid	2012			
10		Rockabill	2019			
11		Havhingsten	Q2 2021			
12		Tuskar	Q3 2022			

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Table 1 ***Irish Sea Cables Data***

2. Ireland - US

We consider Ireland to be reasonably well served in terms of connectivity and diversity to the US in the short to medium term. From being in a position of virtually no connectivity in 1999, Ireland benefitted from the installation of the Hibernia System and the two Global Crossing cables from Wexford linking to the then recently installed Atlantic Crossing AC1 Cables landing in the UK. The Hibernia System and the AC1 System are still active systems [redacted]

More recently the AEC1 transatlantic cable landed in the North West of Ireland and is directly and diversly connected to Dublin. The Hibernia Express system has a spur routed into the South of Ireland and there are current plans to land a spur into the North West of Ireland off the proposed HAVFRUE Transatlantic Cable System from the US to Denmark.

The figure below shows these existing and proposed systems in the context of the overall Western Atlantic Seaboard together with the proposed PISCES system in yellow.

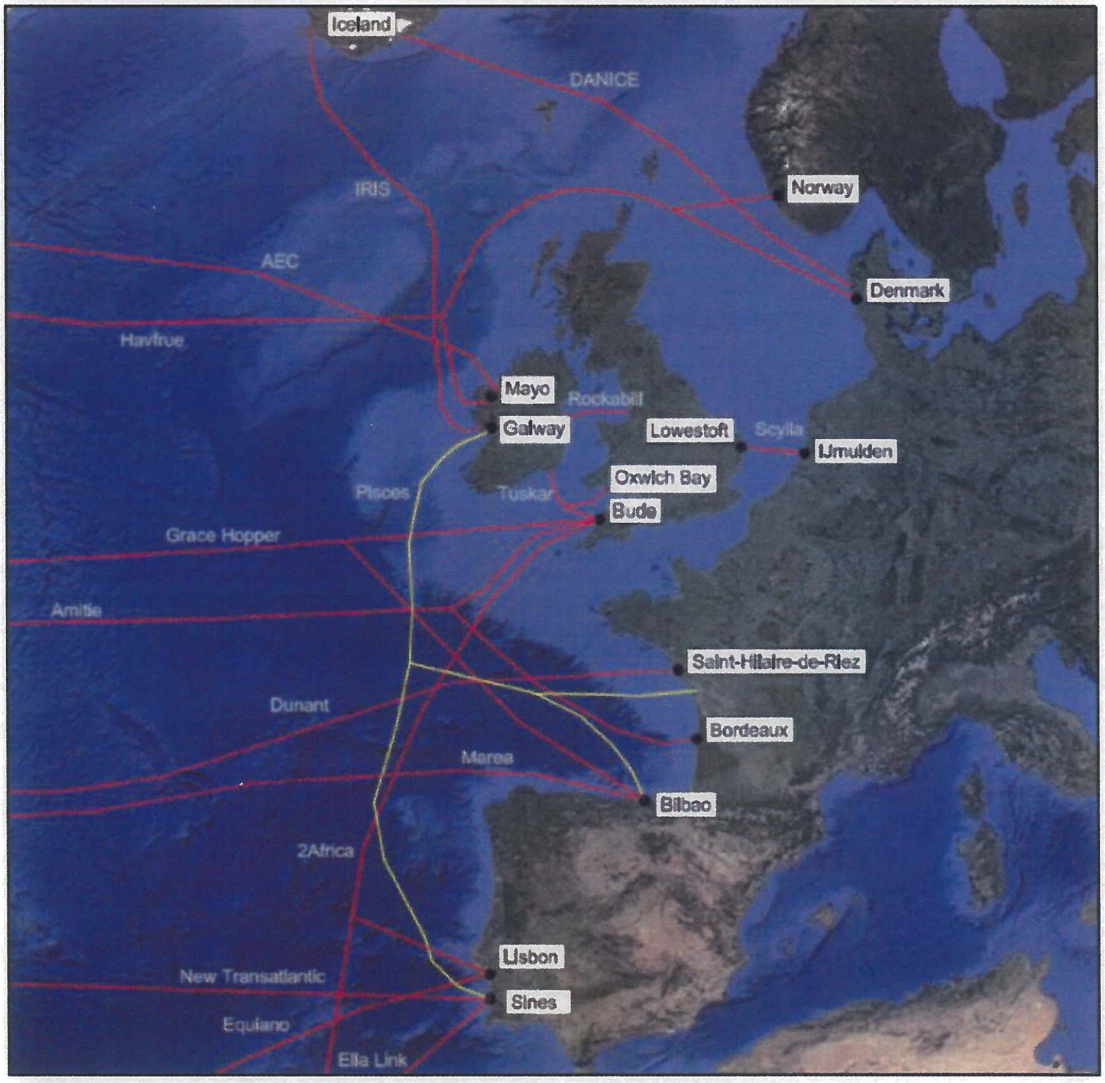

Figure 2 ***Existing and Proposed Transatlantic Systems***

However, even with these existing and proposed systems in place, the current and forecasted level of growth combined with the ongoing data centre growth in Ireland is likely to leave a deficit of transatlantic connectivity into Ireland in the next five to ten years. It is our opinion that at least one new directly landed transatlantic system will be required into Ireland within the next five years and DeepSea Fibre Networks are currently working to facilitate this on the West Coast of Ireland.

Sub Sea Cable	Fibre Count	In Use (estimate)	Available (Estimate)
Hibernia	6 Fibre Pairs		
AC-1 / Global Crossing (Indirectly)	Not known		
AEC 1	6 Fibre Pairs		
Hibernia Express (spur)	2 Fibre Pairs		
HAVFRUE (spur)	6 Fibre Pairs		

Table 2 Transatlantic Subsea Cables Capacity

3. Ireland- Europe

Unlike the two categories above, Ireland currently has no direct connectivity to Europe. All of Ireland's connectivity transits the UK. The planned spur off the HAVFRUE Transatlantic System will provide some level of connectivity from Ireland to Norway/Denmark. However, this a spur from a transatlantic system rather than a dedicated European regional cable system.

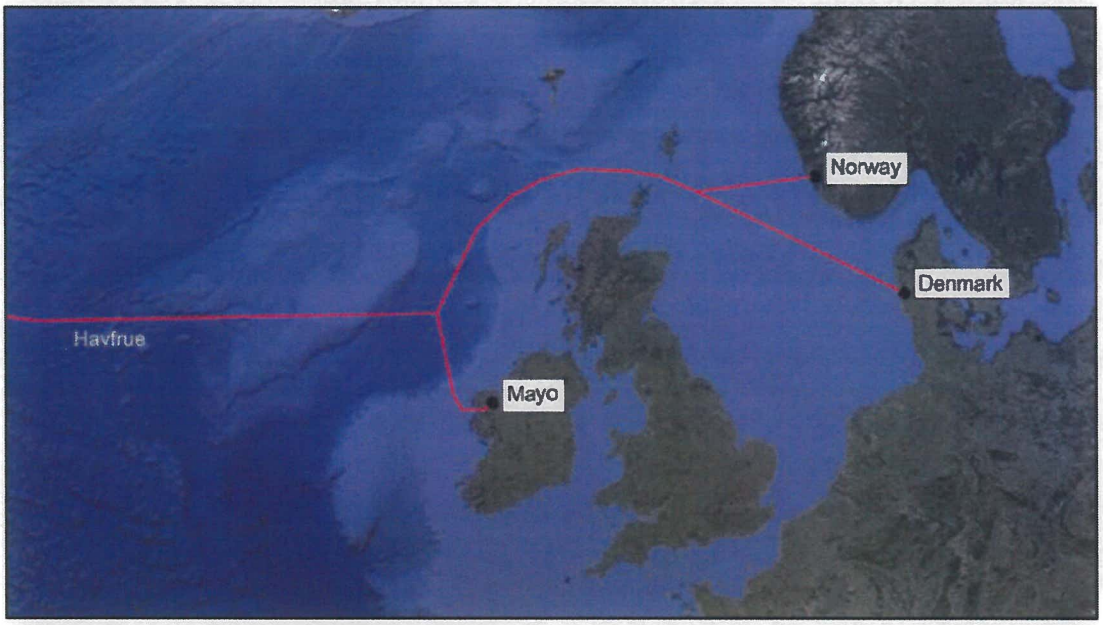

Figure 3 Planned HAVFRUE System

The planned Farice IRIS cable from Galway to Iceland (DeepSea Fibre Networks and FARICE – planned installation 2022) will also provide connectivity from Ireland to Denmark via the IRIS system to Iceland and the existing DANICE system from Iceland to Denmark.

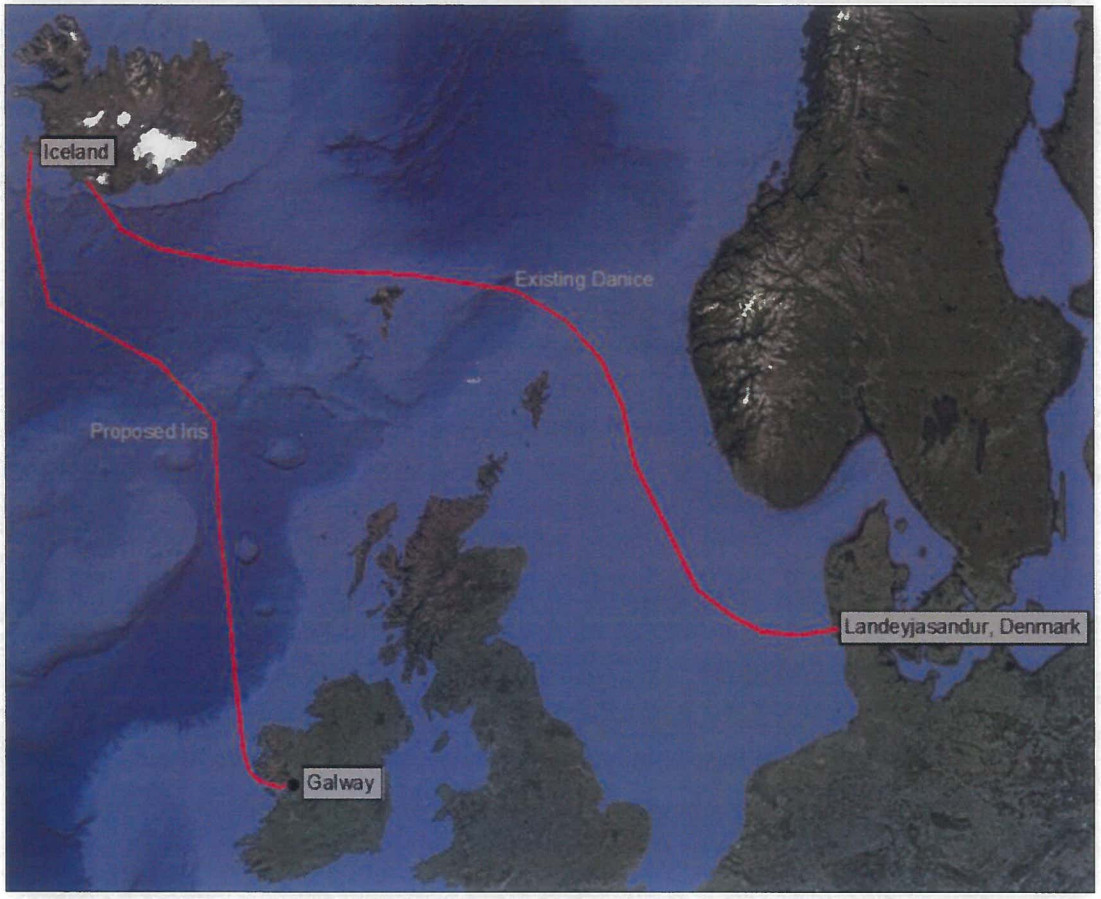

Figure 4 ***Planned IRIS & Existing DANICE Systems***

However, even with the HAVFRUE spur and the new IRIS system in place by the end of 2022, it does not adequately address the requirements of direct international connectivity between Ireland and Europe and especially Southern Europe.

Question 2

"What are the key challenges and commercial barriers that exist in the development of international connectivity in Ireland?"

Response 2

There are three distinct challenges to developing international connectivity; technical, permitting and commercial, each of which are intrinsically linked.

i) Technical Challenges

The issues of designing, procuring and installing sub-sea cables are numerous. It is not intended to go into detail in this response. However, all the following aspects need to be considered;

a. System routes, key tie in points, suitable landfall locations, near shore approaches and seabed conditions, offshore seabed conditions, burial assessment for cable security, public or private land at landfalls, fronthaul & cable landing stations, power availability, fisheries, local interests and marine users and most importantly, secure, reliable, diverse and economically viable backhaul dark fibre.

b. When all of the above factors are considered it greatly narrows the choice of routing available, especially anywhere in Ireland other that the Central East Coast which is unsuitable as a landing for European connectivity routes.

c. The single greatest barrier to International connectivity into Ireland is the issue of backhaul fibre. The choice, diversity, service level agreements, fibre count and most of all cost is the single greatest technical barrier to entry. Dark fibre counts are up to 4 to 5 times more expensive in Ireland compared to the UK and mainland Europe.

d. This was somewhat less of a problem in the recent past when repeatered system comprised low fibre counts and when connectivity involved low fibre count spurs. However, modern repeatered systems have increased from 6 pairs to 24 pairs plus. In these situations, matching backhaul fibre counts in Ireland make such systems commercially non-viable and it is possible that current and future planned systems will by-pass the country.

ii) Permitting

Ireland has always had a relatively lengthy permitting system under the Foreshore Act. A key issue is that the process comprises two stages, a Foreshore Licence is required for Marine Survey and another for Main Lay installation. From recent experience the following timelines are typical;

1. Project Development and Preparation of Application for Foreshore Licence for survey	6 months
2. Period for securing Foreshore Licence for survey	9-12 months
3. Carry out Marine Survey (seasonal) and prepare application for Main Lay	9-12 months
4. Foreshore Licence for Main Lay processing time	12-18 months
Total Time Start to Finish	**36-48 months**

Table 3 Typical Project Permitting Timescales

From the above it can take from 3-4 years before a system can be installed and this assumes that the process is not subject to judicial review challenge. It is understood from recent engagement with the DECC that policy changes in the drafting of the MPDM Bill will see the inclusion of Telecommunications cables in the new consenting regime to be put in place in the medium term. It is not clear how effective this will be as it is understood that priority will be given to Offshore Renewable Energy projects.

iii. Commercial

The installation of sub-sea cables is expensive and is prone to potential significant time and cost over-runs due to both permitting delays and weather risk. Furthermore, due to the demand for new sub-sea systems globally, there is a major shortage of survey vessels, cable suppliers and main lay vessels.

In addition to this the market generally no longer provides up-front investment for new developer led systems. This makes it very difficult to fund all the up-front engineering, surveys, vessels and cable booking and puts private equity investors off. Debt facilities are not an option. As a consequence of these issues, the majority of systems being built are those specifically required by the Key Customers to where they want them, which does not always tie into the overall requirements that Ireland needs for connectivity to Europe.

Question 3

"What measures are required, including actions by the State, to alleviate the key challenges and commercial barriers in the development of international connectivity in Ireland?"

Response 3

In a general context the State should try to assist in the development/promotion of a more robust, diverse, open access dark fibre network across the country. Developments such as the Metropolitan Area Networks and the National Broadband Plan are potentially helpful but are not satisfactory in addressing the deficit. Consequently, any landing sites outside of the Central East Coast will continue to encounter expensive backhaul rates.

In terms of permitting, the proposed new Marine Planning and Development Management consenting regime, which will replace the Foreshore Act, may assist. However, the transition and bedding in period may make the process worse in the short to medium term. Some interventions should be put in place possibly to classify sub-sea cables in a different format to say HVDC interconnector power cables and renewable energy projects. A 30mm diameter sub-sea telecoms cable is a vastly different and minimal impacting project compared to the more significant inputs of the HVDC's and offshore wind arrays.

From a commercial viewpoint the costs imposed for Foreshore Licences for telecom cables were increased from an acceptable figure in circa 2009 to be aligned to the UK Crown Estate charges (some of the most expensive in Europe). These costs have been reduced somewhat recently but a lower level would be more appropriate.

State Intervention

We believe that there should be state intervention to support the development of connectivity particularly in instances of market failure. The following sections relate to DeepSea Fibre's development of the PISCES system as an example.

The European Commission through the 'DG Communications Networks, Content & Technology Investment in High Capacity Networks Unit' is currently structuring the CEF2 programme (Connecting Europe Facility). The CEF project team are currently analysing the size of market failure in each of the areas addressed by the CEF programme and calls for proposals will be issued shortly.

The CEF programmes main objective in the digital sector is;

*"to contribute to the development of projects of common interest to the deployment of safe and secure **very high capacity digital networks and 5G systems**, to the increased **resilience and capacity of digital backbone networks in EU territories** by linking them to neighbouring territories, as well to the **digitalization of transport and energy networks**"*

The CEF fund specifically includes submarine cable systems.

DeepSea Fibre Networks has been developing the PISCES system for the past 2 ½ years (see Figure 5 overleaf) and has proposed the system for inclusion in the CEF2 fund. However, the system needs to be nominated and supported by the Member State (in this case, Ireland) for further inclusion.

The PISCES system clearly meets the various criteria for inclusion as a Project of Common Interest in the CEF2 fund under the following terms:

I. Market Failure
II. Supporting WiFi and community 5G deployments
III. Facilitating EU HPC connectivity
IV. Deployment of cross border backbone networks contributing to increase performance, resilience and high capacity communications networks.

With regard to Point I above, we firmly believe that there is market failure. There is no direct link from Ireland to Europe and all of Ireland's telecom traffic must transit the UK to connect to Europe. This is not an ideal situation and may be exacerbated by the current Brexit issues. [redacted]. Further specific details on the above can be provided.

In summary, the Member State support of the PISCES project may assist in the development of a true open access ultra-high capacity fibre optic network linking Ireland directly to Europe (Spain, France, Portugal).

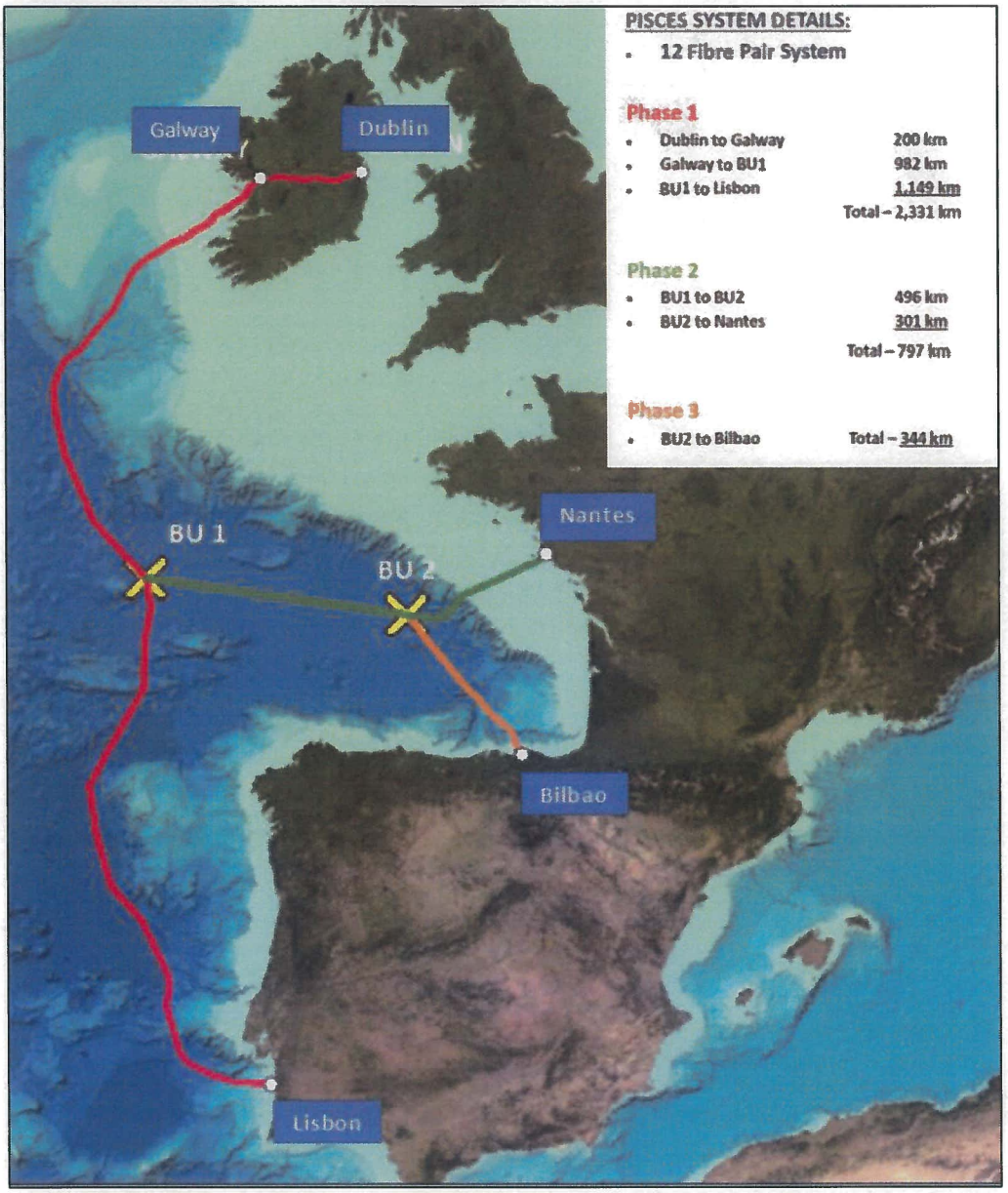

Figure 5 Planned PISCES System

Question 4

"Given that the most recently deployed and planned submarine cables on transatlantic routes have landed on the west coast of Ireland, are there likely to be any issues with onward connectivity from the landing station to service provider hubs and data centres?"

Response 4

In response to this question we refer you to our Response 2 above, which outlines the issues faced in detail.

[redacted]

In summary it is considered that the high cost and lack of diversity and competition in the backhaul dark fibre market in Ireland is a significant issue and a potential disincentive to land newer systems in Ireland.

Question 5

"How do you think Ireland is positioned when compared to other countries with best practice international connectivity?"

Response 5

At the time of the first tranche of modern cable system installations from 1997 to 2001, Ireland was in a relatively unique and positive position due to unforeseen circumstances. Prior to the installation of the Hibernia system and the Global Crossing connections to the AC1 transatlantic system, Ireland had practically no transatlantic capacity (a single spur off the ageing PTAT system). Shortly after the Hibernia and AC1 systems were installed both of those new systems systems went into Chapter 11 bankruptcy and emerged with new ownership and a very low new cost base. Consequently, Ireland went from almost zero connectivity to one of the best in Europe at low equivalent rates. However, those low rates only applied to Dublin due to a lack of open access dark fibre connectivity to the rest of the country. We firmly believe that these two systems and the T-50 Dublin MAN were instrumental in the major growth of the data centre industry around Dublin.

It is our firm belief that this perception must be redressed. The other issue is the cost and availability of dark fibre backhaul as detailed in Response 3.

Question 6

"How can Ireland position itself as the preferred location to land submarine fibre optic cables in Europe?"

AND

Question 7

"How can Ireland make it attractive for companies to build new submarine fibre routes from other European countries to Ireland?"

Response 6 & 7

The responses to these questions are largely covered by the proceeding responses and are summarized below;

1. Redress the perception of Ireland as now being a problematic country to permit projects.
2. Address the dark fibre open access overly expensive backhaul fibre issue.

The first point may seem simplistic but in fact is very difficult. The Foreshore Act and indeed the Planning Act are proving to be a major barrier to development especially when public objections are raised. The timeline and framework for dealing with objections and judicial reviews are very lengthy and public objections are becoming more common.

With regard to point 2, it is our belief that private sector initiatives will gradually address these issues. However, greater State support for such initiatives would be very helpful, perhaps through ISIF or by somehow enticing greater private equity investment into the sector.