

# Once in a generation

The English Channel is home to the busiest shipping route in the world, windfarms, and hundreds of unexploded bombs – they're just some of the reasons why nobody has put a new subsea cable there in 20 years. But that's all about to change. Melanie Mingas gets the details from Pioneer Consulting's **Iain Ritson**



**W**hen it comes to laying cables under the sea, there is no shortage of challenges to overcome, but some locations pose more challenges than others. For example, in the Channel between England and France, engineers have to contend with traffic on the world's busiest shipping route, windfarms, the weather and a seriously hard seabed — geologically speaking, the Channel is an area of erosion, rather than deposition, meaning that the sea floor is rock, not sediment.

They're just some of the reasons why nobody has laid a cable there for 20 years.

So when Crosslake Fibre announced earlier this year that it was to embark on a once in a generation project to connect Paris, France, to Slough, UK via the shortest route possible (see diagram), ears across the industry pricked.

"It's quite hard to find a route that will be as safe as possible from external aggression to bury the cable and protect it. That's why nobody has built [in the

Channel] for so long," says Iain Ritson, Pioneer Consulting's director of client solutions and project director for the disaggregated CrossChannel Fibre project.

Involved from inception, Pioneer Consulting was contracted to provide system integration services, meaning the firm has led on route design, procurement, refinement of the business case and, most recently, execution of the marine survey. EGS has been appointed preferred supplier and Swedish company Hexatronic is supplying the cable itself.

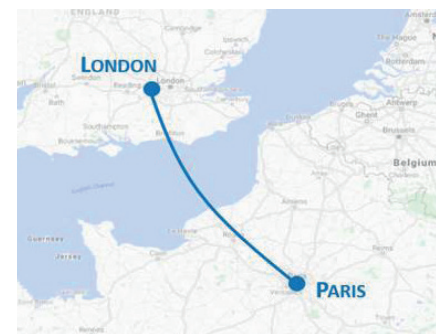
"Pioneer is responsible for everything between the two beaches. That's the demarcation point — it's beach to beach and everything in between," Ritson explains.

"We get their buy in and we go ahead, and install, buy, action, whatever needs to be done," he adds.

It isn't Ritson's — or Pioneer's — first time working with Crosslake Fibre, the Canadian firm that specialises in connecting data centres. The two also collaborated on another first-of-its-kind submarine cable, Crosslake Fibre, connecting Toronto to New York via Lake

Ontario with a 192-core link. That project wrapped up in 2019 and Crosslake and Pioneer announced CrossChannel in July 2020. November saw the completion of the marine survey for CrossChannel, including geotechnical and geophysical surveys, a process that demanded more than a dozen pieces of specialised equipment.

"It really couldn't be more different from the previous project. It's the same cable and it's not a dissimilar length, but Lake



The new cable takes the shortest route



Ontario was really benign. There are no fishermen, no marine traffic and weather in the summer is fine,” Ritson recalls.

There were also no unexploded bombs in Lake Ontario. That there are hundreds at the bottom of the Channel is no secret — there was a controlled explosion as recently as 3 November 2020, after one dislodged from its resting place on the seabed. But it does bring additional challenges for new cable projects.

“We were expecting it, but you don’t know what it’s going to materialise to,” says Ritson.

“There are records of where these bombs were put, but when they went to recover them after the wars, they recovered 10 to 20% of them and the rest were never really found.

“The currents move them, the fishermen move them. Some places are worse than others,” he continues.

It’s a twist that saw Pioneer Consulting add a UXO (unexploded ordinance survey) study to the project spec for the first time in the firm’s more than 20-year history. Describing the process, Ritson says the device used is “like a large metal

detector”, that is moved in all directions to scan for what may lurk beneath the surface.

“Around the world there are lots of munitions dumps and they are marked on the charts. At the end of the Second World War that’s where they dumped stuff and it’s hard to think about it these days, but that’s what they did. So normally you would go round [the bombs] and try to avoid them, but here you haven’t got a choice because they are everywhere.”

### Shortest route

Detours aside, the aim of the CrossChannel project is to run the shortest route for high-capacity, low-latency connectivity that outperforms all other cables currently in service.

CrossLake’s 550km, non-repeated system will boast 96 fibre pairs, each providing over 20 terabits per second of throughput capacity. The infrastructure will be used by millions of people and businesses on both sides of the water, who will all have access to enhanced bandwidth at lower operating costs.

“Milliseconds are money and the shortest path is the fastest path,” says Ritson.

It’s a similar principle to that employed for the CrossLake project in Canada. However, while designing the shortest route sounds simple enough, the intricacies of the local geography mean the reality this time is far from simple.

“The USP is the shortest length, but a straight line isn’t practical,” Ritson explains.

The cable has to be buried — deep — to sufficiently to protect it, but the rocky sea floor of the Channel means the route must be engineered to zigzag “from sand to sand”, avoiding multiple obstacles on the seabed.

“There are lots of routes over the Channel and they all have different degrees of success in being installed and you measure that by how often the cable has been hit by a fisherman or trawler,” Ritson says.

One of the most obvious routes eliminates that risk entirely: the Channel Tunnel. “No anchors or fishermen in there,” Ritson says, however, there are other problems. The first problem is that the route isn’t the shortest, and the second is that a hard lesson on route diversity has already been learned. The Channel Tunnel has twice been hit by fire — once in 1996 and again in 2008 — both times impacting communications infrastructure.

“There’s a lot of fibre in the Channel Tunnel, so you’re not as diverse as everyone else and then if there is a problem it hits everyone,” Ritson says recalling that the most recent fire “broke



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**Iain Ritson** Pioneer Consulting’s director of client solutions, project director CrossChannel Fibre

all the cables”. “So you have to have some route diversity,” he adds.

At the time of interview Ritson and his team had just completed the marine survey and were in the process of analysing “terabytes of data” to optimise the final route. With everything on track, the selection of an installation partner is “imminent” and the CrossChannel cable remains on schedule to go into service in September 2021.

“There has been an awful lot of work gone into it to get to this point,” Ritson says of the process to date, however, he reports that it has been a more than enjoyable project.

Recalling his highlights from recent months, he adds: “Every day is different. Yesterday we were talking about UXOs, today something different, and tomorrow will be something different again.”

The next step is permitting, on which Ritson says: “It’s a long process, although not an impossible one.”

But it is a time-intensive process, meaning that for now, after months of work, the only thing for Ritson and the team to do is wait. 