

“Over the seas



Clare Island and Inishbofin, off the Mayo coast, are the latest off shore islands to be connected to the National Grid. *Electric Mail* has been looking at the project, in the first of a series of articles reporting on ESB's £1.7 billion investment programme

BACK in the 1970's when he was Minister for Finance the late George Colley decided that ESB should supply electricity to offshore island consumers at a cost no greater than charged to their mainland counterparts. It became known as the Colley edict and resulted in the provision of a high quality service based on local diesel generation sets.

But diesel generators are expensive to operate. The service had to be heavily subsidised even though islanders were not eligible for the concessionary Night Saver tariff and in addition voluntary restrictions were placed on the use of electric cookers, heaters and electric showers.

In the early 1990s with diesel prices hitting high levels and demand for electricity growing at a rapid pace the alternative of linking some of the larger islands to the national grid by sub-sea cable began to be considered. With some European Community funding the project could make financial sense. ESB would still be bearing a cost in supplying the islands but it would be less than under the existing diesel generation option.

The submission went in and EU funding was obtained for a first phase

project to run cables to Cape Clear off the coast of Cork and the Aran Islands in Galway Bay. It made sense to combine the two submarine links into one project in order to spread the fixed costs.

The more you buy the less the cable costs per metre while the contract for laying the cable involves the fixed costs of chartering a vessel, rigging it, transporting the cable and finally derigging the vessel.

Cape Clear and the Aran Islands were both connected in 1996 and this year Inishbofin and Clare Island off the Mayo coast are being linked to the national grid. The power will be flowing to Clare Island this month while the Inishbofin connection should be completed by November.

The projects are technologically challenging involving a range of skills mostly supplied by ESB staff. The original hydrographic surveys to pinpoint sub-sea routes for the cables were undertaken by ESB International. The cables were laid under contract by Balfour Kilpatrick and Hamsto, but the on-shore links and a major upgrading of the onshore and island networks was undertaken by ESB

staff in Southern Region (Dunmanway Branch) and Mid Western Region (Galway, Clifden and Castlebar staff).

The Cape Clear/Aran Islands phase of the project cost £5.5 million while the Inishbofin/Clare Island phase is expected to cost £2.6 million. The EU is paying half the cost.

Quality of service and security of supply have been prime considerations at every stage from design to execution. It's hard to beat the security afforded by three local diesel generators. However, voltage regulation can be improved. The national grid provides more than double the short circuit capacity of local generators in the face of fluctuating demand.

But the reliability of a supply is only as good as the weakest link. In these cases the weakest points are on shore rather than under the sea. A falling tree on the mainland is more likely to cause a blackout on the island than a breach in the sub-sea cable. That's the risk taken by everyone on the grid and, of course, it doesn't take long to repair.

A break in the sub-sea cable is less likely to happen but if it does it could take from two weeks to a month to

and...”

Future brightens for Tory residents



ESB Staff "sailing out" from the mainland to Tory Island

repair even with the ready availability of prepared repair joints. The international average repair time for sub-sea cables, according to one survey, is 37 days but that average included many deep-sea breaks in very hostile conditions.

As an added protection against the worse scenario plug-in generator sets will be held in readiness for transport to the islands.

But the cable is built to resist tides, currents, fishing activities and other marine hazards and has an estimated life of forty years.

The same 120mm square copper conductor has been used throughout reducing the need to keep more than one repair joint and one spare drum of cable. It's rated at over 300 amps—well above current demands. It is a heavy duty, three core, EPR insulated, double wire armoured cable similar to that used to supply North Sea oil rigs.

An important part of the project has been the upgrading of the onshore lines both on the islands and on the mainland. It links in with the general upgrading from 10 to 20kv networks. Supplies on the islands have in the past been prone to interruptions caused by arcing as a result

of sea salt deposits on insulators. 38kv rated insulators are being installed on the 20kv lines and 20kv insulators on 10kv lines to overcome this problem.

The cables to Inishbofin and Clare Island have now been laid. Picked up by the laying vessel at the Pirelli Plant the 20 km of cable weights some 600 tonnes. It was laid at a rate of 1.5 km to 3 km per hour.

The vessel initially stands about 300-800 metres offshore and about that much cable is offloaded onto the sea and held up with floats. It is hauled onto the shore protected, buried and encased in concrete above the shoreline. Below the shoreline for a distance of 100m-200m special protectors are applied over the cable.

Using satellite navigation the vessel sets off for the other shore laying the cable behind it. At the other side enough cable is again put overboard to reach the shore before it is cut.

The cable to Inishbofin extends from Port na hAille on the island to Cleggan on the Galway Coast. The Clare Island link runs from the island's harbour to Lugadamba near Louisburg on the Mayo Coast. 

IN October 1997 Seamus McDermot, lighting specialist for ESB Contracts, Northern Region, received a request from Donegal County Council to have a look at improving the public lighting on Tory Island.

Seamus's design recommended replacing all existing obsolete mercury lights with modern high pressure sodium fittings, installing extra lights in conjunction with the Tory Island CoOp who carried out the Civil Work for the new lighting columns.

The work is being funded by Donegal Co Council with the Department of Arts, Heritage, the Gaeltacht and the Islands. The official switch on took place on Tuesday 21st July. The impact that the new lighting has had on the islanders cannot be overstated. In the words of Patsy Dan Rogers (The King of Tory) "It is one of the best developments on the island and has given us new confidence for the future."

ESB Contracts staff Brian Gallagher, Patrick Bonner, Liam O'Grady and Joe Foody, carried out the installation with military precision under quite challenging conditions. This involved staying on the island for weeks at a time. They worked in conjunction with the Tory Island CoOp who carried out the Civil Work for the new lighting columns.

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ESB Staff pictured with Maureen Doohan, Chairperson Donegal Co. Council on the pier before leaving for Tory



The official switch on with Patsy Dan Rogers, King of the Island, welcoming Maureen Doohan, Chairperson of Donegal Co.Council and Hugh O'Neill, ESB Sligo



ESB workers erecting lights on Tory Island