

POWER STATION

Moneypoint, Kilrush



Date Of Survey: 19th February 2004

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Architectural Heritage Evaluation:	Categories of Special Interest:
Record Only	Archaeological (AG)
Local	Architectural (A)
District	Artistic (AR)
Regional	Cultural (C)
National <input checked="" type="checkbox"/>	Historical (H) <input checked="" type="checkbox"/>
International	Scientific (SC)
	Social (SO) <input checked="" type="checkbox"/>
	Technical (T) <input checked="" type="checkbox"/>



Summary

Moneypoint is Ireland's only coal fired Power Station. It has a current generating capacity of 915MW. It is designed to burn a wide range of internationally traded coals.

The station is located on the River Shannon Estuary, near Kilrush in Co. Clare. Shannon Ferry Limited currently operates two purpose-built ferries on its service across the Shannon Estuary from Tarbert, Co. Kerry to Killimer, Co. Clare.

The project for the construction of the power station commenced in 1979 with the commissioning taking place for the three units of 305MW each in 1985, 1986 and 1987 respectively.

Description

Site

The original site area was 146ha and this was increased with a reclaimed area of 24ha resulting in a total site area of 170ha.

Background

Part of the rationale for the construction of Moneypoint was that ESB decided to increase its fuel source diversity and so undertook the construction of this

major coal-fired Power Station. In the building of the station it was also necessary to build an associated coal port capable of handling bulk carriers of up to 250,000 dwt approx. The station has a current capacity of 915MW; however, provision was made for a further unit of 305MW which was not built.

The location was selected because of its natural features with the site having a natural rock foundations and a deep water facility which could be developed to take vessels up to 250,000 tonnes.

ESB in-house engineers and project managers carried out the planning, environmental impact assessment, conceptual design, system design, detailed design of civil works from initial site investigation to construction drawings, detailed design of mechanical balance of plant systems and control and instrumentation, detailed design and installation of all electrical systems, selection of plant parameters, plant specification, tender evaluation, quality control, supervision of construction commissioning, plant operation and maintenance.



1. Aerial View of Power Station. 2. Administration Building. 3. Crane Off-loading Coal. 4. Interior of Crane Room.



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Prior to the specification writing for the major items of plant, an in-depth evaluation of the latest technology available was carried out on boiler, turbine, coal handling and ash handling equipment. ESB engineers carried out extensive hydraulic studies to test the effects of the discharge of large quantities of cooling water into the Shannon Estuary and a special jetty was built to accommodate the bulk carriers. The Jetty is 380m long and carried on 425 steel piles of average length of 50m driven through the river bed into the rock.

Coal Port and Coal Yard

The coal is imported by large bulk carriers (30,000 to 250,000 dwt) and discharged by coal handling plant on the deep water jetties. The coal storage and handling facilities consist of coal stacking/reclamation equipment and conveyor belts which convey the coal to the boiler bunkers. There are four bunkers per boiler with a capacity of 400 tonnes each. From the bunkers the coal is extracted by twin belt feeders and delivered to the pulverising mills where it is ground to a fine powder in order to ensure complete combustion in the furnace.

Pulverised Fuel Ash (PFA)

A by-product of coal firing is pulverised fuel ash. Coarse ash is collected under the furnace in the ash hopper and fine ash is collected under the precipitator in the hoppers. From these the ash is transferred to the disposal area which has a capacity of 3,000,000m² although a portion of the ash is available for industrial purposes such as the cement industry.

Administration Building

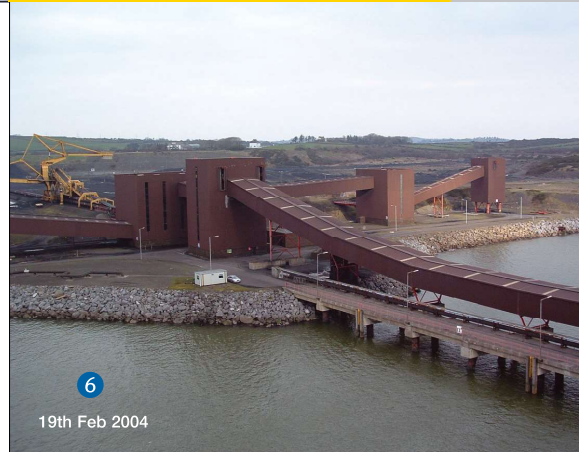
The workshops and canteen contained within the control building form part of the generating station complex. The administration building is a four storey reinforced concrete and brick building, is 2100m² and constructed with ribbed floor with roof slabs with a 2m deep downstand beam around the perimeter.

Canteen

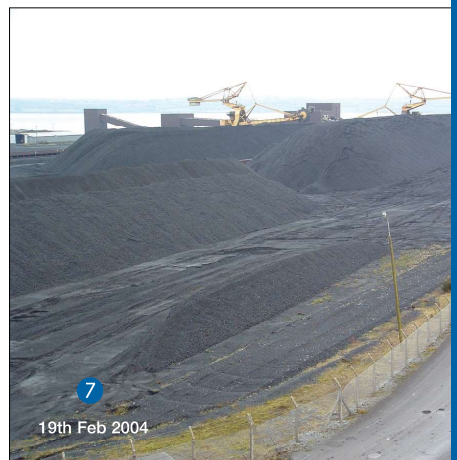
The canteen is a single storey structure of some 810m² with a flat in-situ concrete reinforced concrete slab roof over the kitchen area and a steel framed copper clad pyramidal roof over the canteen.

Workshop

The workshop has a power floated slab incorporating numerous complex bases.



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5. External View of Generating Hall. 6. View of Conveyor Belt. 7. Coal Storage. 8. Krupp-Ardelt Crane Head.

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Turbine Hall

The pulverised coal ignites and burns in the boiler which is lined with water wall tubes. The water is converted to steam in the tubes and the steam from these pass into the steam drum and onto the super heaters where it is connected to the turbine at 16.47MN/m² and 540°C.

Moneypoint 915MW coal-fired power station consists of three 305MW units based on natural circulation boilers and reheat steam turbines. The plant is direct-cooled using estuarine water.

It consists of dual-purpose boilers and can produce steam from coal or oil where required.

Equipment was procured on the international market and the station has U.S. manufactured boilers, Swiss-manufactured turbines, and auxiliary equipment from many countries, selected on the basis of lifetime cost-effectiveness. The steam turbo-alternators were built in Switzerland. There are three turbines of a

manufacturer and type: Brown Boveri, four-cylinder, single shaft impulse-reaction.

Chimneys

The flue gas which leaves the furnace is discharged into the main flue and the chimneys. Each chimney is 225m in height.

Transmission

The electricity produced by the turbine/generator is fed through phase segregated busbars to the generator transformer where the voltage is stepped up to 400kV for feeding into the National Grid.

Oil Storage Tank

The power station has two oil storage tanks with a capacity of 50,000 tonnes. This oil is capable of providing the same capacity of 915MW in the event of coal being unavailable.



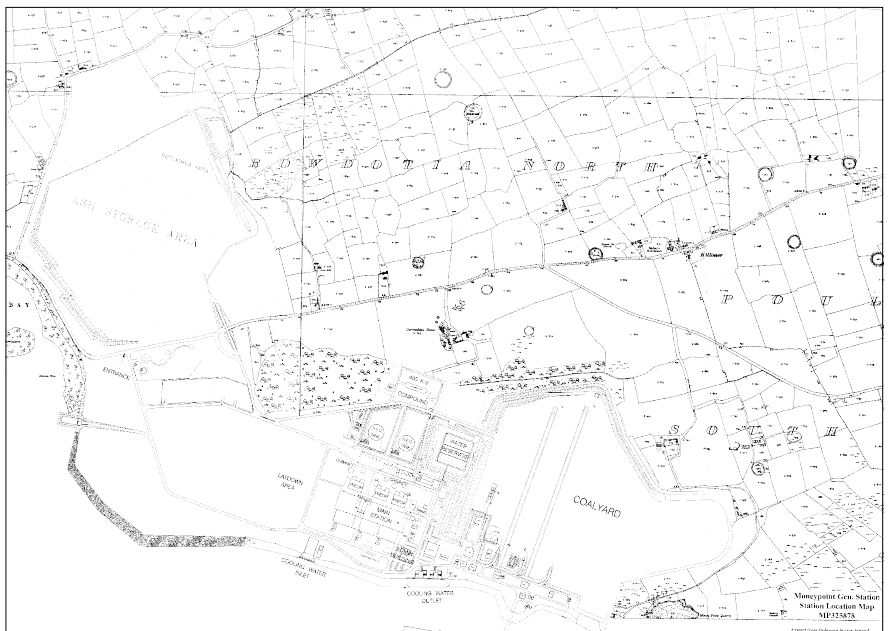
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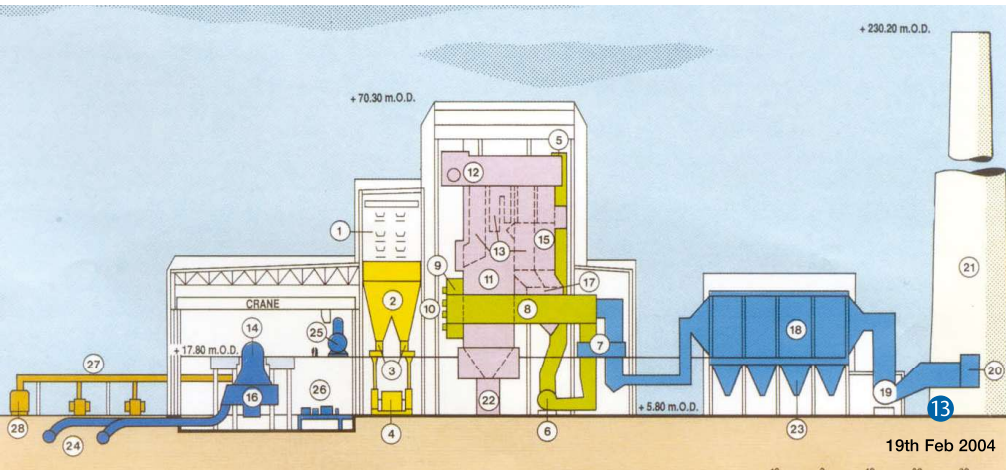


9. Interior of Control Room. 10. Interior of Turbine Hall. 11. Interior of Turbine Hall. 12. Coal Unloader Crane.

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Refurbishment Works

Between 1991 and 1995 ESB were responsible for the design, specification, procurement, engineering and contract management of the replacement of the existing firing equipment with low NOx burners and the replacement of the existing boiler protection and burner management systems with new microprocessor based systems which were integrated with the plant distributed control systems.

Environmental

ESB's policy on conservation and the environment resulted in the plantation of thousands of trees and shrubs around Moneypoint. This in turn provided excellent shelter for birds and animals, and increased the range of wildlife that flourishes in the locality.

Awards

Moneypoint was the first ESB generation station to achieve the voluntary international environmental management system standard ISO 14001.

Special Interest – Technical

The latest technology used in Moneypoint has been used as a

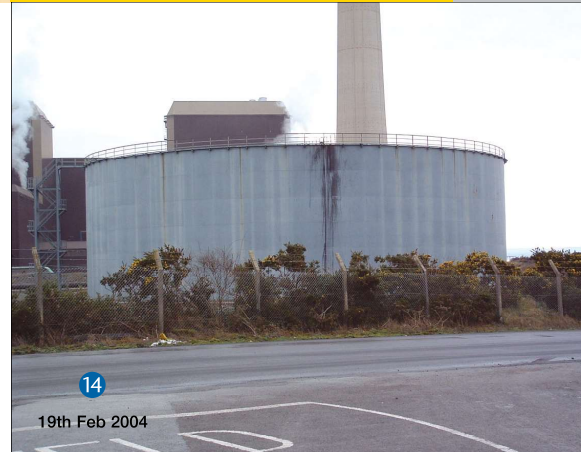
reference point for the operation of large coal fired stations by a number of international utilities.

Special interest - Historical

The site is located on the site of an old school called Killimer National School from 1895.

Special Interest – Social

During construction the station employed up to 1600 people on the site with materials purchased from the local area.



13 Schematic Diagram of Generating Process. 14 Oil Storage on Site. 15 Aerial View of Generating Building from Crane. 16 Plaque to Commemorate Site of Former Killimer School. 17 Substation.