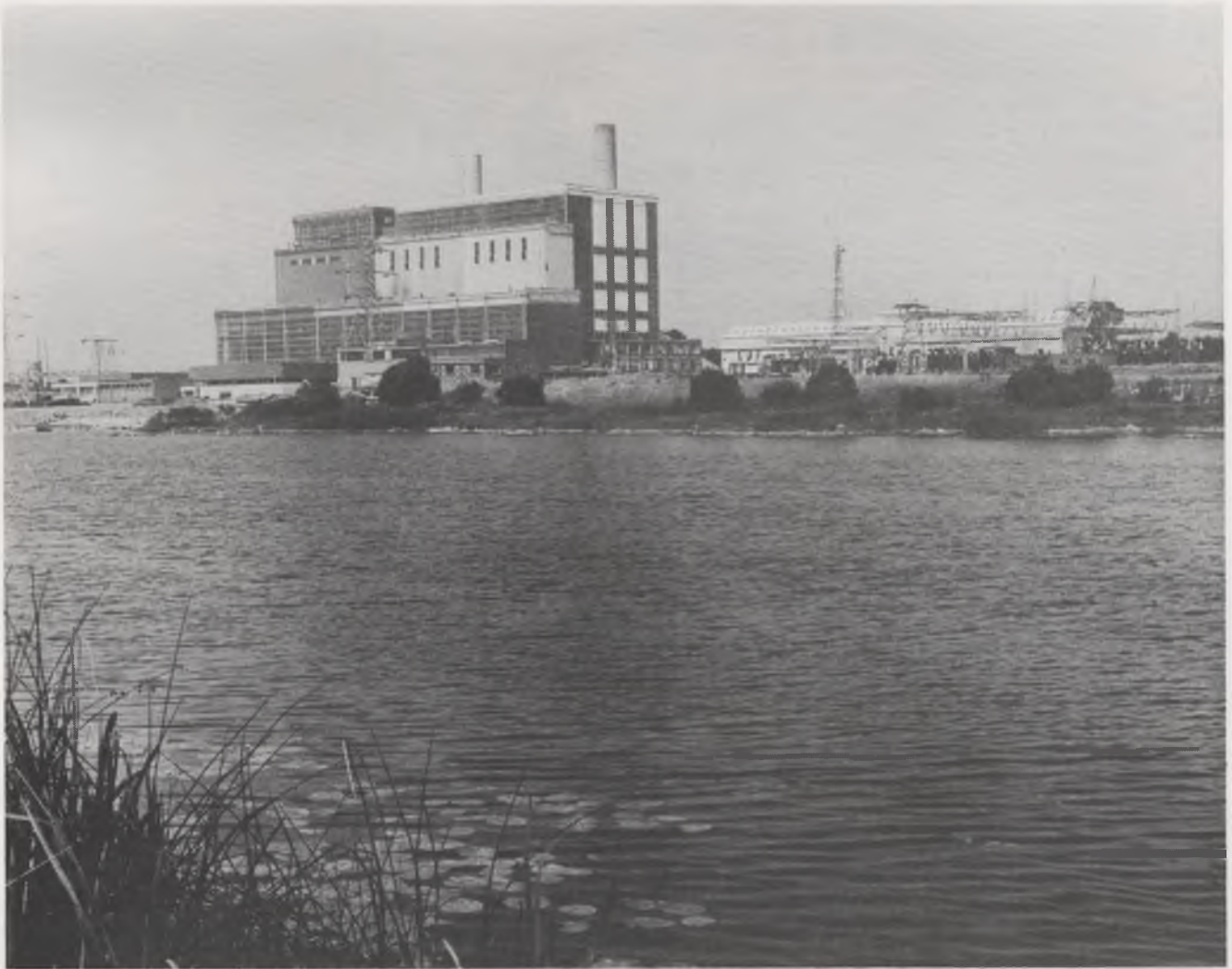


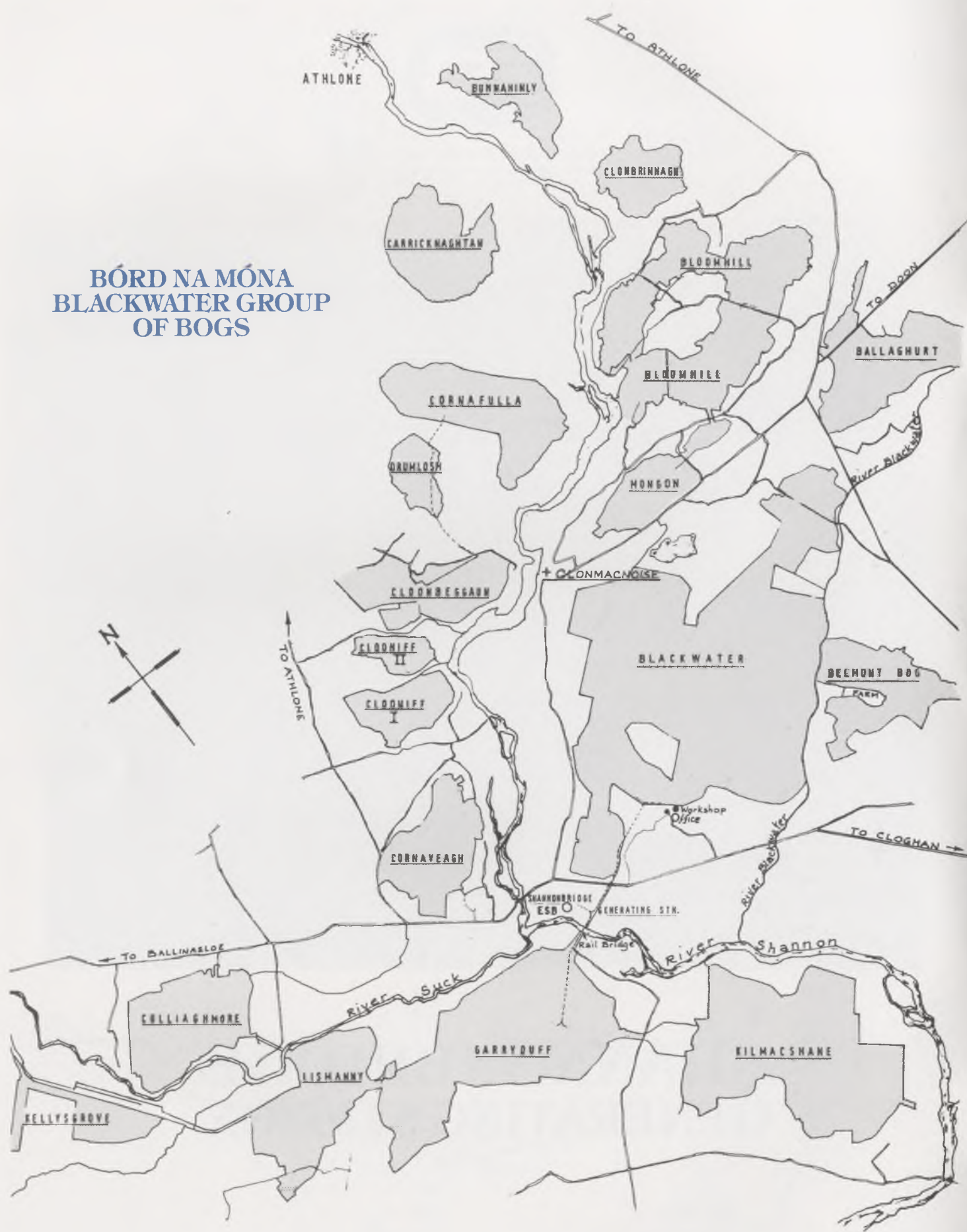


**ELECTRICITY SUPPLY BOARD**  
**BORD SOLÁTHAIR AN LEICTREACHAIS**



# **SHANNONBRIDGE GENERATING STATION**

**BÓRD NA MÓNA  
BLACKWATER GROUP  
OF BOGS**



Scale 1 cm = 1 Km

## SHANNONBRIDGE GENERATING STATION

Shannonbridge is located sixteen miles south of Athlone close to the point where the river Suck joins the Shannon. Large specimen fish breed in the warm water flowing from the station, attracting anglers from many countries. The area is part of the Clonmacnoise Heritage Zone, which includes the monastic settlement, Mongans Bog, the Eskers, Callows, and Martello Fortifications. The area is noted for its many rare species of plants and bird life.

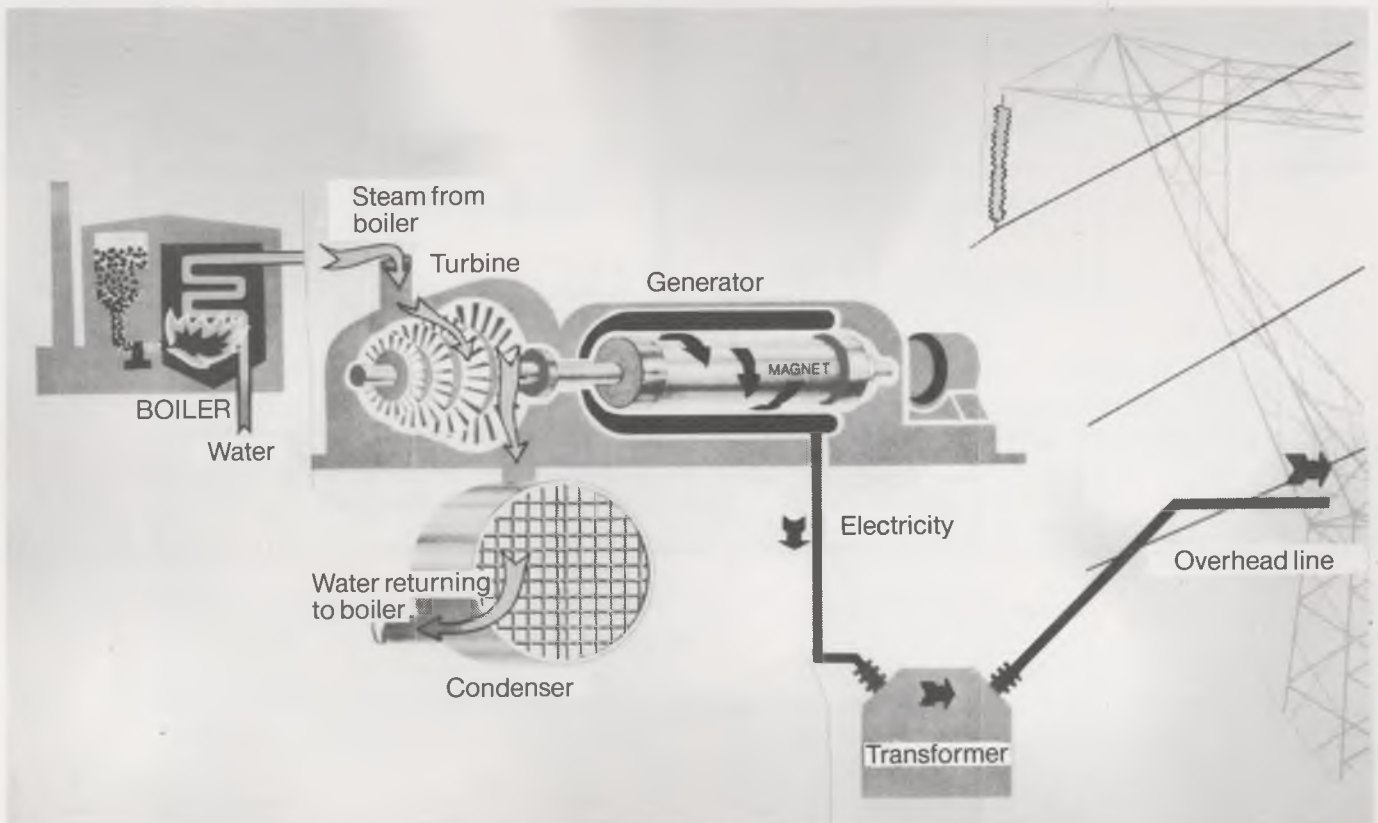
The Station burns milled peat obtained from the surrounding bogs. The Station has three Units for producing electricity, each having a boiler, turbine and generator. Unit 1 has 40,000 Kilowatts (40 MW) capacity and was commissioned in 1964. Unit 2 has 40 MW capacity (1976) and Unit 3 45 MW (1982). One hundred and ninety people are employed in the operation and maintenance of the Station.

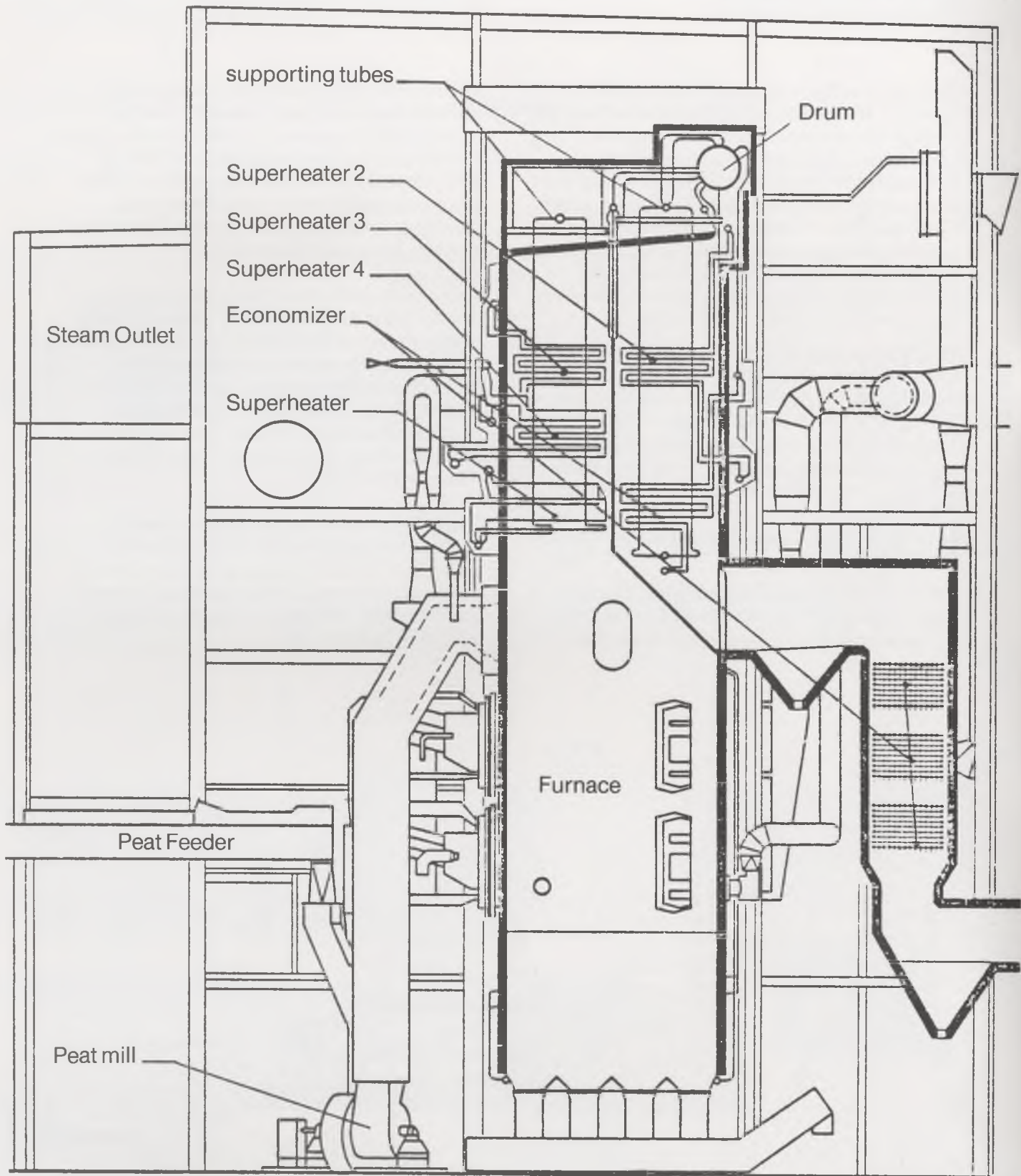
Bord na Móna supplies peat by rail from a bog area of 5,500 hectares (13,500 acres) in Counties Offaly, Galway, Roscommon and

Westmeath. The Station uses about one million tonnes of peat annually, costing twenty million pounds (1989). The peat has a moisture content ranging from 40% to 65%, depending on the composition of the peat and conditions during the drying season and subsequent storage. The annual average is usually about 55%.

The peat is pulverised in mills which also dry the peat to about 15% moisture, using hot gases recycled from the furnaces. The boilers supply steam to turbines which drive generators producing electricity at 10,500 Volts. After passing through the turbines the steam is cooled, using water from the river Shannon, and returned as water to the boilers.

Transformers increase the generated voltage for supply to the national grid, through 110,000 Volt transmission lines to Ferbane, Athlone, Ennis, Cashla (Galway) and 220,000 Volt lines to Maynooth and Killonan (Limerick).





BOILER 3      49 kg/s, 115 bar, 518°C

Natural circulating boiler with peat firing

## UNITS I AND II

Boiler Manufacturer	Walther & Co., Cologne, West Germany
Pressure	65 Kg/cm <sup>2</sup>
Temperature	512°C
Rating	175 Tonne/Hour
Year of Commissioning	I 1965, II 1976
Mills	Babcock HGS 115/120/160
Turbine Manufacturer	Parsons, England
Rating	40 MW

## UNIT III

Boiler Manufacturer	V.K.W. Dusseldorf, West Germany
Pressure	92 Bar
Temperature	518°C
Rating	49 Kg/Sec.
Year of Commissioning	1982
Mills	Babcock, HGS-50
Turbine	Parsons, England
Rating	45 MW

## FUEL HANDLING PLANT

Pohlig, Cologne, First Unit Commissioned 1965, Second Unit Commissioned 1983.

Capacity 2 x 1200 M<sup>3</sup>/Hr.

## PLANT HIGHLIGHTS

### UNITS I & II

Four single speed mills (1,000 R.P.M.) with double outlets, each supplying one burner in corner firing arrangement. The original mills on boiler 1 have been modified

by including a "grinding ring" to reduce radial clearance over the last row of hammer heads. Pulverised fuel size is 13 to 18% greater than 1 mm size.

### TUBULAR MILD STEEL AIRHEATERS

Boiler 2 originally had a glass tube low temperature airheater to eliminate cold end corrosion. This was unsatisfactory due to rapid fouling and tube breakages.

All glass tubes are now removed and 60% of area is retubed with mild steel except for some stainless steel at the cold air end.

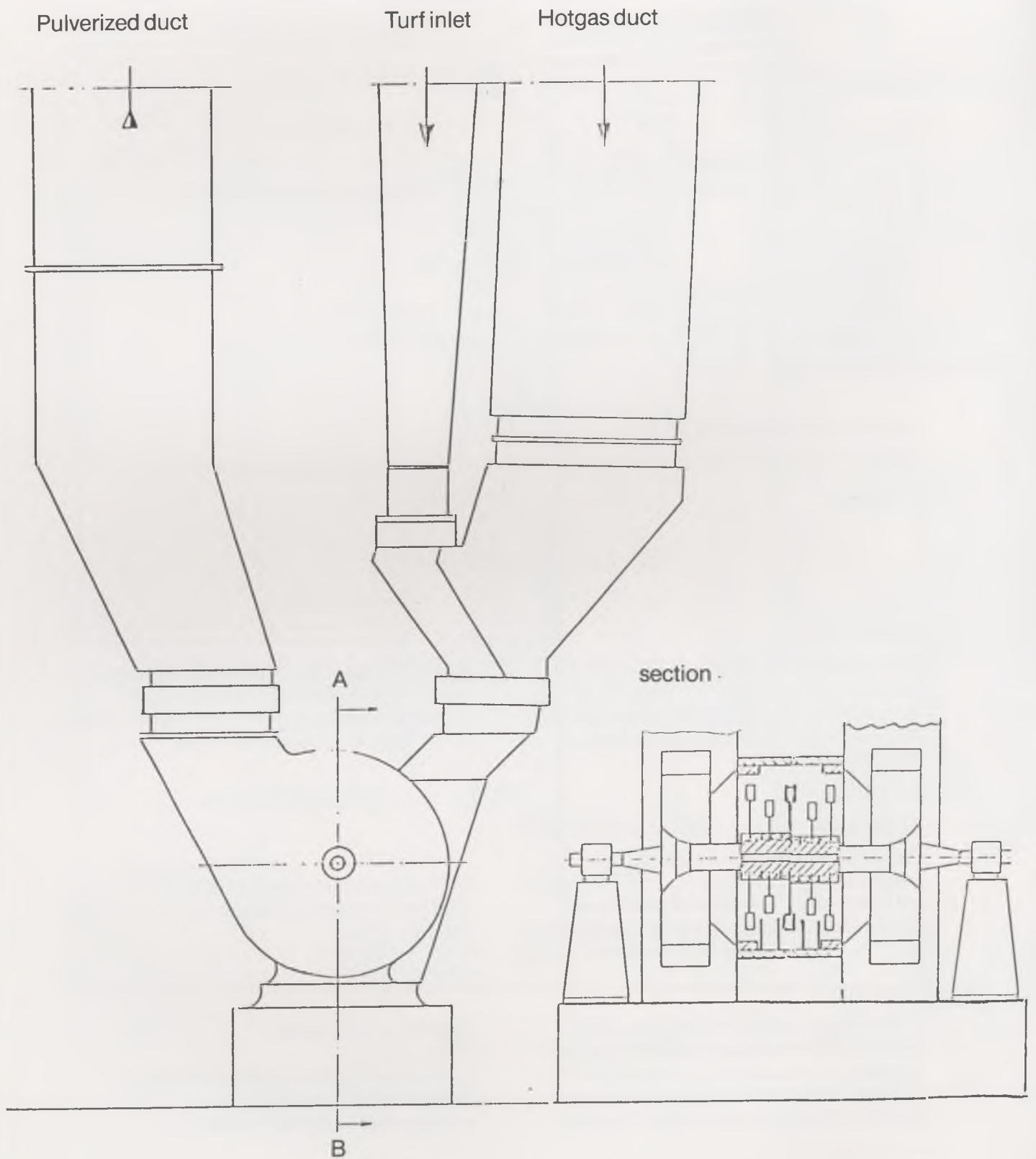
### UNIT III

Four variable speed mills (Range 450-680 R.P.M.) with single outlets. Vapour separators on each mill providing 70% fuel and 40% gases to the main burner and the remainder to a vapour burner

higher in the furnace.

The rotary airheater of Rothemuhle design is the first of this type used in a milled peat boiler in Ireland.

# HGS-MILL, BII 115/120/160 SHANNONBRIDGE I



## PARTICULARS OF FUELS AND ASH

### TYPICAL PEAT FUEL ANALYSIS:

#### Proximate Analysis:

Moisture Content	55%	0
Ash	1.2%	2.6%
Volatile	30.9%	68.6%
Fixed Carbon	12.9%	28.8%

#### Ultimate Analysis (Dry, Ash free):

Carbon	55-56%
Hydrogen	5- 6%
Nitrogen	1.3-1.5%
Sulphur	0.2-0.4%
Chlorine	0.1%
Oxygen	36-38%

#### Calorific Value:

Gross Calorific Value (GCV) of dry peat	21.28 MJ/kg
Net Calorific Value (NCV) of peat with 55% moisture content	7.70 MJ/kg

#### Pressed Density:

Average pressed density	223 kg/m <sup>3</sup>
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#### Quality Range of Delivered Fuel:

Moisture Content	40.65%
Pressed Density	150-390 kg/m <sup>3</sup>
Ash Content	1-5%

### Typical Raw Fuel Screening Analysis:

Proportion of fuel retained on the following sieves:

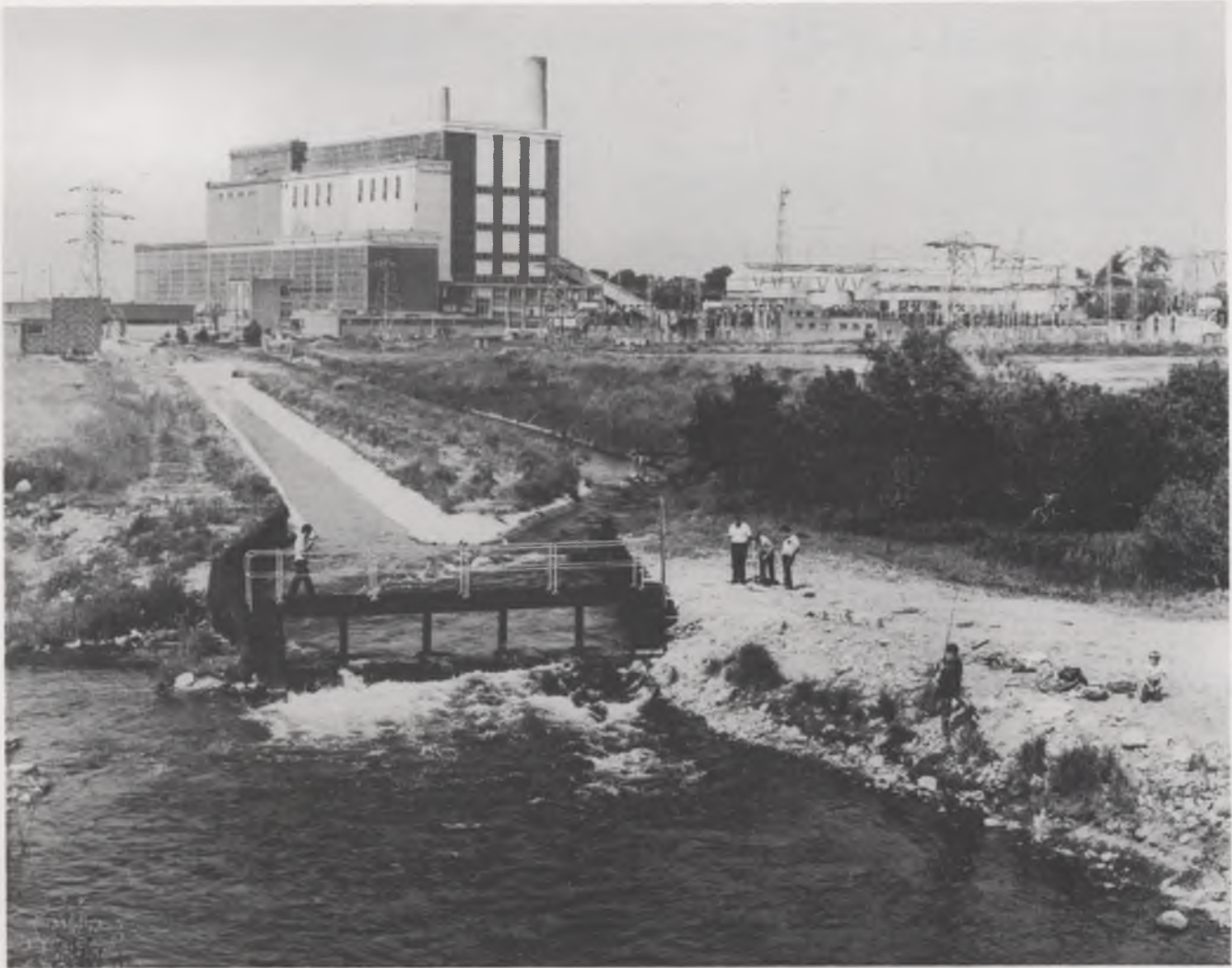
25 mm	5%
12.5 mm	12%
6.35 mm	18%
3.175 mm	18%
1.68 mm and under	47%
	100%

#### Note:

Pressed density is an arbitrary index to compare the density of milled peat particles related to a datum moisture content.



*View of Fuel Handling Plant*



*Cooling Water Discharge*

### Ireland's Generating Stations

- Hydro Stations
- Steam Stations
- ▲ Pumped Storage Station

