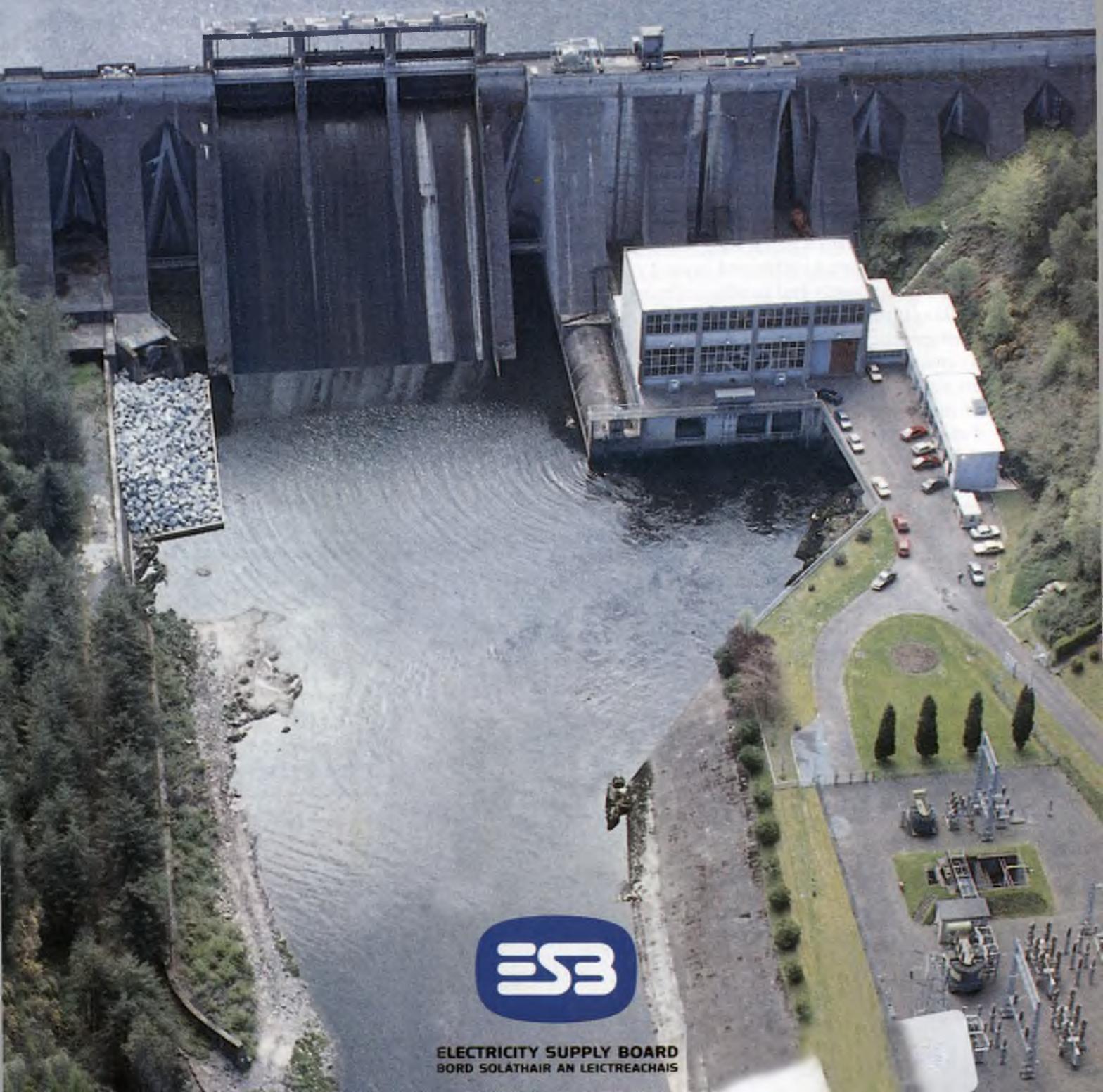


THE RIVER LEE HYDRO-ELECTRIC SCHEME



ELECTRICITY SUPPLY BOARD
BORD SOLATHAIR AN LEITREACHAIS



Inniscarra Power Station

THE POWER STATIONS

The two ESB generating stations on the Lee have a combined capacity of 27 megawatts and produce almost 80 million units of electricity a year. At Carrigadrohid there is one generating unit with a capacity of 8 megawatts and at Inniscarra there are two: the larger with a capacity of 15 megawatts and the smaller with a capacity of 4 megawatts.

The generating plant in the stations is comprised of two vertical shift Kaplan turbo generators at Inniscarra, which operate under an average head of 30 metres. At Carrigadrohid a similar unit operates under an average head of 13 metres. Power is generated at 10.5 kilovolts and transformed up to 38 kilovolts for local distribution and to 110 kilovolts for long distance transmission.



Carrigadrohid Power Station

THE RIVER LEE HYDRO-ELECTRIC SCHEME

The River Lee hydro-electric scheme was built during the period 1952-1957 at a cost of £4.5 million. It involved the creation of two lakes in the picturesque Lee Valley. These lakes cover an area of 14 square kilometers (3,500 acres) and have a storage capacity of 45 million cubic meters (tonnes).

THE LOCAL ENVIRONMENT

The lakes at Inniscarra and Carrigadrohid are environmentally beneficial to the region, not only from a scenic point of view, but also because they created new opportunities for recreations such as boating, angling, walking and for the provision of lakeside parks.

Approximately 8 million gallons of water per day are taken from the reservoir to serve the Cork City and County water supply scheme. This can be increased to 50 million gallons per day in the future if it is required.

There is a fish hatchery at Carrigadrohid where over one million salmon smolts are reared each year. These go to stock many Irish rivers and lakes but over 100,000 are released into the River Lee, below the dams. They go into the sea for some years but return to

the River Lee to spawn, sustaining the stocks in the river both for the commercial fishermen and the anglers.

The Borland type fish passes in the dams ensure that the fish can move easily up and down the river.

The upper portion of the lake at Carrigadrohid is an area known as the Gearagh. It is probably the only alluvial forest in Western Europe. It was formed at the end of the last ice age when the ice cap that covered Ireland for thousands of years melted and a new river flowed down to the sea, depositing rich soil and rock fragments which provided for the lush growth existing to this day.

This area, which is owned by ESB, was declared a nature reserve in 1987 under the 1976 Wildlife Act. In winter, up to 5,000 wild birds take refuge there.

THE DAMS

The concrete dam at Inniscarra, which is of the buttress type, is 250 metres long and 42 metres high. It has three high level spillway gates which are used to dispose of excess water. At Carrigadrohid, the dam is of the mass concrete gravity type. It is 130 metres long and 22 metres in height and has three deep sluice-type spillway gates.

These dams, which are now over 30 years old, are being upgraded to the highest international standards.



Inniscarra under construction

DOWNSTREAM FLOODING

Occasional flooding of the valley downstream of Inniscarra has always been and will continue to be inevitable. This is due to the topography and the climatic conditions in the area. However, flooding downstream of Inniscarra has been minimised by the presence of the dam. The discharge from Inniscarra has always been less than the peak natural inflow in any of the floods since the dam was built. ESB issues flood warnings to those known to be at risk downstream of the dam during periods of floods.

The River Lee is not a major factor in city flooding. Low Barometric pressure and south easterly winds combined with spring tides are the main influences on city flooding.



The Gearagh

PRINCIPAL TECHNICAL PARTICULARS

Catchment area		1,400 km ³ (306 sq. miles)	
Average annual rainfall		1,524 mm. (60 in.)	
Average annual flow (Inniscarra)		35 m ³ /sec. (970 cu. secs.)	
Storage capacity		45.4 × 10 ⁶ m ³ (5% of annual flow)	
<i>Generating Station</i>		Carrigadrohid	Inniscarra
Dam length		130 m	250 m
Dam height		22 m	42 m
Spillway gates		Three, (10 ft.) 3m	Three, (40 ft.) 12 m
Turbines	Carrig.	Innis.	Generators
Number	1	2	Type
Type	Kaplan	Kaplan	3 phase, 50 cycle
Head	13.55 m	29.4m	Normal rating, kVA
Rating, H.P.	11,600	21,600 and 5,800	11,500
R.P.M.	167	214 and 428	Power factor
Year commissioned	1957	1957	0.7
Maker	Voith	Voith	Voltage
			10,500
			Maker
			Siemens
			Schuckert
			Brown-Boveri
Main Transformers		Switchgear and Control Gear	
Rating, kVA	12,000 27,000 and 5,000		Maker
Maker	A.S.E.A.		A.S.E.A.
Average Annual Output:			
Carrigadrohid			22 × 10 ⁶ kWh
Inniscarra			58 × 10 ⁶ kWh
	Total		80 × 10 ⁶ kWh



Generating Hall