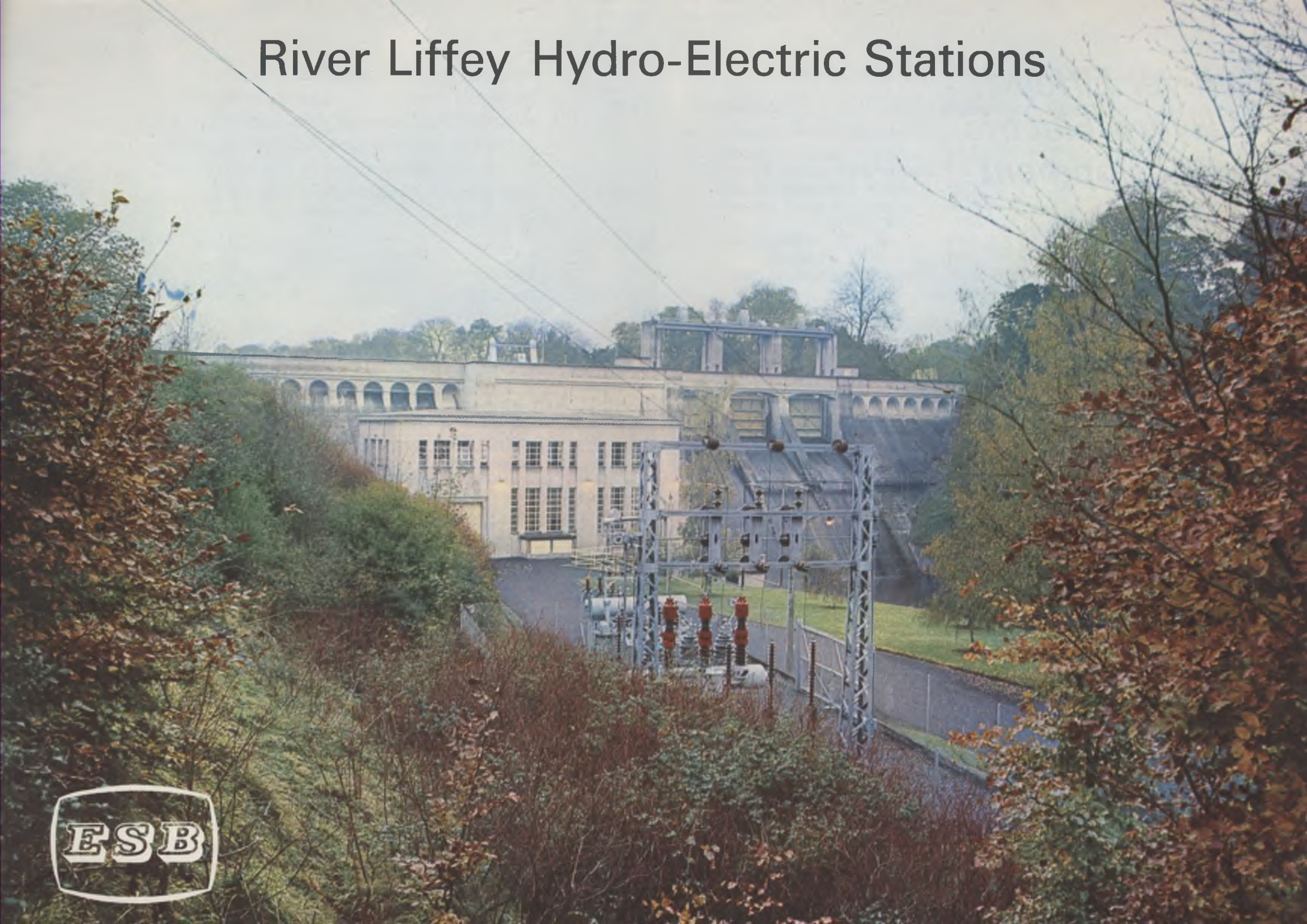


# River Liffey Hydro-Electric Stations



# *River Liffey Hydro-Electric Development*

The hydro-electric development of the River Liffey comprises three stations, Pollaphuca, Golden Falls and Leixlip, each located at a point in the river where the natural falls provide suitable sites for the stations.

The River Liffey, which rises in the Dublin Mountains, is 55 miles from source to Leixlip and drains an area of over 300sq. miles. The erection of the 100 ft. dam at Pollaphuca serves a dual purpose. In addition to developing a 150 foot head of water for the generation of electricity, the dam provides a reservoir of 5,000 acres at some 600 feet above sea level, thus providing a source for an additional water supply to the city of Dublin.

## **The Pollaphuca Power House**

From the dam, an intake tunnel about a quarter of a mile long conveys the water from reservoir to the 120 foot high surge tank. This tank provides a safety control to the flow of the water through the 200 foot length penstocks to

the two 15 megawatt generators in the power house below. The first of these sets was commissioned in 1944 and the second in 1947. The power, generated at 10/11 kV., is raised to 110 kV at the outdoor transformer station before being fed into the national network. The output of the station is generally confined to peak load periods.

## **The Golden Falls Power House**

The mile-long stretch of water between the power house at Pollaphuca and the smaller station at Golden Falls is used as a compensation reservoir, for the purpose of equalising the flow in the lower river, when the first station is in operation. The dam at Golden Falls develops a 60-ft. head of water to operate a 4 megawatt turbo-alternator.

## **The Leixlip Station**

After passing through Golden Falls the river flows 35 miles through Co. Kildare to Leixlip, about 12 miles from Dublin. A dam impounds the water and forms a reservoir of about 100 acres with a capacity of 160 million gallons of water and provides a 60 foot head. The plant comprises a 4 megawatt turbo-alternator.

Golden Falls and Leixlip stations are operated by remote control, the former from Pollaphuca and the latter from the large transformer station at Inchicore.

The E.S.B. has planted 600 acres of young trees in the reservoir area and the power station to further enhance this sylvan beauty spot, into which the man-made hydro-electric scheme has been skilfully integrated with no serious impairment to the overall scenic view of the many visitors who come here in large numbers.



Above: Control Room



Below: Generating Hall

## PRINCIPAL TECHNICAL PARTICULARS

Station . . . . . *Pollaphuca Golden Falls Leixlip*

Catchment area	km <sup>2</sup>	312	312	854
Average annual flow	m <sup>3</sup> /sec.	9.5	9.5	14.7
Storage capacity	10 <sup>6</sup> m <sup>3</sup>	150	0.8	0.75
Average head	m	46.9 (154 ft.)	17.4 (57 ft.)	17.5 (57.5 ft.)
Dam: Length	ft.	256	320	374
Height	ft.	104	50	80
Gates, number and width		Three, 23 ft.	Three, 23 ft.	Three, 20 ft.

### Turbines

Number		2	1	1
Type		Kaplan	Propellor	Kaplan
Rated H.P.		21,100	5,230	5,800
R.P.M.		300	187.5	300
Year commissioned		1944 & '47	1943	1949
Maker		E.E.	E.E.	E.W.

### Alternators

Type		Three phase, 50 cycles		
Normal rating	kVA	18,750	5,000	5,000
Power factor		0.8	0.8	0.8
Voltage		10,500	10,500	10,500
Maker		E.E.	E.E.	B.B.C.

### Transformers

Number	Maker	Rating	Voltage ratio
<i>Pollaphuca</i>			
T101 and T102	A.S.E.A.	20,000 kVA	11,000/106,700
<i>Leixlip</i>			
T41	B.B.C.	5,400 kVA	10,500/39,000

### Average Annual Output:

Pollaphuca . . . . .	25 x 10 <sup>6</sup> kWh
Golden Falls . . . . .	9 x 10 <sup>6</sup> kWh
Leixlip . . . . .	13 x 10 <sup>6</sup> kWh

**Total** 47 x 10<sup>6</sup> kWh

# One of our many Stations

Of the 28 generating stations 9 are hydro, 4 operate on milled peat, 6 on sod peat, 1 on native coal, 6 on oil, 1 on sod/milled peat and 1 on coal or oil.

<b>HYDRO STATIONS</b>		<i>Capacity Mw.</i>	<b>STEAM STATIONS</b>		<i>Capacity Mw.</i>
River Shannon:	Ardnacrusha	85	Portarlington (Co. Laois)	<i>sod peat</i>	38
River Liffey:	Pollaphuca	30	Tarbert Island (Co. Kerry)	<i>oil</i>	120
	Golden Falls	4	Allenwood (Co. Kildare)	<i>sod peat</i>	40
	Leixlip	4	Ferbane (Co. Offaly)	<i>milled peat</i>	90
River Erne:	Cathaleen's Fall	45	Lanesborough (Co. Longford)	<i>sod and milled peat</i>	60
	Cliff	20	Rhode (Co. Offaly)	<i>milled peat</i>	80
River Lee:	Inniscarra	19	Bellacorick (Co. Mayo)	<i>milled peat</i>	40
	Carrigadrohid	8	Shannonbridge (Co. Offaly)	<i>milled peat</i>	40
River Clady:	Clady	4	Arigna (Co. Roscommon)	<i>native coal</i>	15
		219	Miltown-Malbay (Co. Clare)	<i>sod peat</i>	5
<b>UNDER CONSTRUCTION</b>			Screeb (Co. Galway)	<i>sod peat</i>	5
Pumped Storage			Cahirciveen (Co. Kerry)	<i>sod peat</i>	5
Turlough Hill, Co. Wicklow	292		Gweedore (Co. Donegal)	<i>sod peat</i>	5
<b>STEAM STATIONS</b>	<i>Capacity Mw.</i>		<b>Total Capacity, Hydro and Steam</b>	<b>1,678 Mw.</b>	
Pigeon House "A" (Dublin City)	90				
<i>oil</i>					
North Wall (Dublin City)	48				
<i>oil</i>					
Ringsend (Dublin City)	270				
<i>coal/oil</i>					
Marina (Cork City)	120				
<i>oil</i>					
Pigeon House "B"	268				
<i>oil</i>					
Great Island (Co. Wexford)	120				
<i>oil</i>					



Above: Golden Falls Generating Station

Below: Pollaphuca Generating Station

