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Regional Engineer**

Functions of Rivers Agency

- Maintain designated watercourses and sea defences.
- Construct and maintain drainage and flood defence structures.
- Advisory and enforcement to protect drainage.

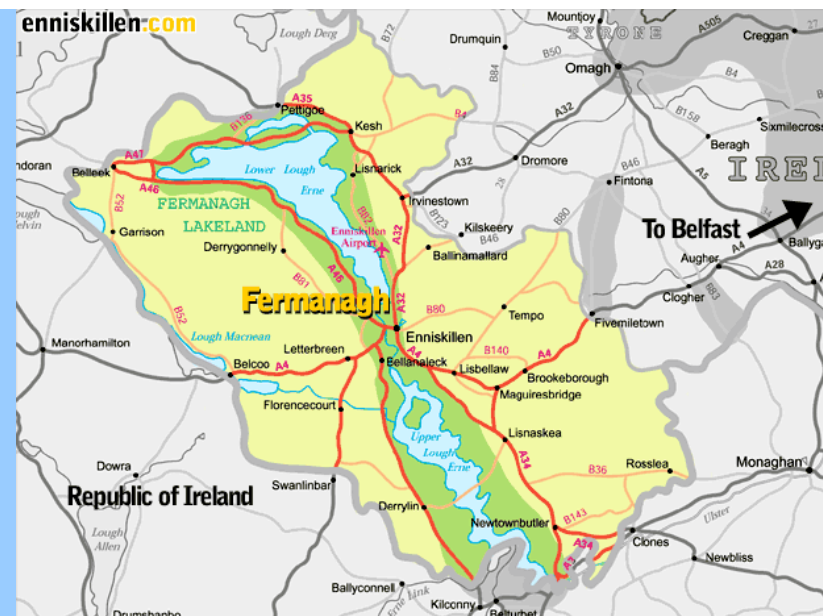
The Agency aims to improve social conditions and to support economic development in N. Ireland through:-

- Reducing risk to life and damage to property from flooding from rivers and the sea.
- Preserving the productive potential of agricultural land.



The Erne System

- Is approximately 100 km long
- Is the second longest river in Ireland
- The River Erne rises from Lough Gowna in County Cavan, flows through County Fermanagh, and ends in Ballyshannon in County Donegal.
- Catchment of 4,000km² (1,850km² is in Co Fermanagh).
- There are approximately 90 Islands in Lough Erne
- There are about 250 named Loughs in Co Fermanagh



Fermanagh - Flooding A Major Problem?

History

- 1842 Drainage Act
 - £17k to be spent on Lough Erne for navigations.
 - After £9k proprietors refused consent.
 - Navigation works abandoned.

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

- 1879 - The Price Scheme
 - Mr James Price.
 - Drainage scheme embracing a lock-less Erne Navigation.
 - Promoted under the 1863 Drainage Act.
 - Elected Drainage Board

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

- Drainage Board had no navigation powers.
- Erne Lough and River Drainage Act of 1876.
 - 3 years passed without constitution of Board.
- Amending Act of 1879- extended to 5 years.
- Board eventually set up in September 1880.

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

- Still insufficient powers.
- Further amendment to 1876 Act.
- Passed on 27th August 1881.

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

- Price Scheme implemented between June 1881 and July 1890.
- Cost of £211k v £94k estimated.
- Took 9 years to construct v 3 years estimated.
- Not successful due to design limitations and impact of railways.

Knockninny Derrylin

Lough Erne Estate

An aerial photograph of the Lough Erne Estate. The image shows a large, dark blue lake with numerous islands and peninsulas of varying sizes. The islands are covered in dense green vegetation. The surrounding land is a mix of green fields, some with small buildings or farmhouses, and a few roads. The sky is a pale, hazy blue, suggesting a clear day. The overall scene is a vast, scenic landscape.

- Conveyance dated 27th July 1927
- Bed and Soil of Lough Erne
- Accreted Foreshore

Colebrooke River near
Maguiresbridge

Fermanagh - Flooding A Major Problem?

History

Discontentment about levels:

- 1905 Drainage board Regulations
 - Hold Upper Lough 1½ ft below winter level and 1 ft below statutory summer level.
- 1906 Messrs Irwin and Pomeroy challenged.
- Upheld but ruled that Board had discretion.

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

Discontentment about levels:

- Claims by farmers that Lough levels were unnecessarily high.
- 1922 Drainage Board argued that the interests of thousands of farmers had been sacrificed to please ‘ a very limited number of fair-weather sailors.’

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

- Drainage Act 1925 - responsibility changed from Drainage Board to County Council.
- Shepherd Report produced in 1929.
 - Proposed 4 drainage schemes options.
 - Offering differing levels of relief from flooding.

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Fermanagh - Flooding A Major Problem?

History

- Group set up to consider report.
- Concluded in 1932.
- None viable due to cost.
- 1933 Government and Fermanagh County Council bought out water rights at Belleek.
- Carry out an experiment.

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

- Water level control alone did not sort flooding.
- Control handed back to Drainage Board.
- Immediately ignored statute and reduced Loughs by 3 ft below statutory limits in spring.
- Boats were damaged, claim was lodged.
- Board resigned in 1940

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

- No real control over water levels.
- 1941 Government stepped in.
- Flying boat base on the Lower Lough made it necessary for levels to be kept up.
- Farmers accepted given the war situation but continued to press for a drainage scheme.

Knockninny Derrylin

Fermanagh - Flooding A Major Problem?

History

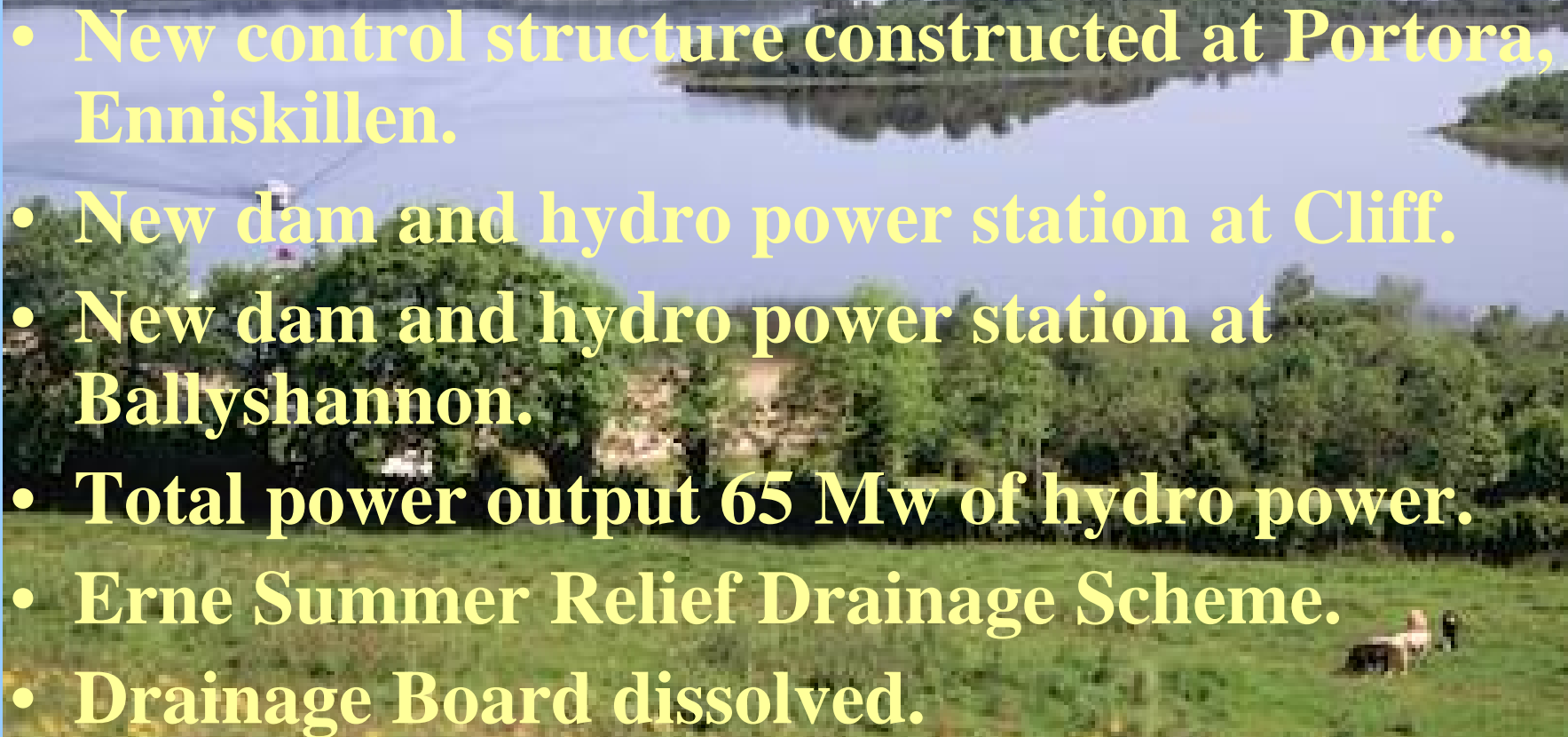
- 1943 Prime Minister promised a further investigation.
- Electric Supply Board had for some years been carrying out improvement to River Erne in Donegal.
- October 1947 Prime Minister announced cross border negotiations had started.

Knockninny Derrylin

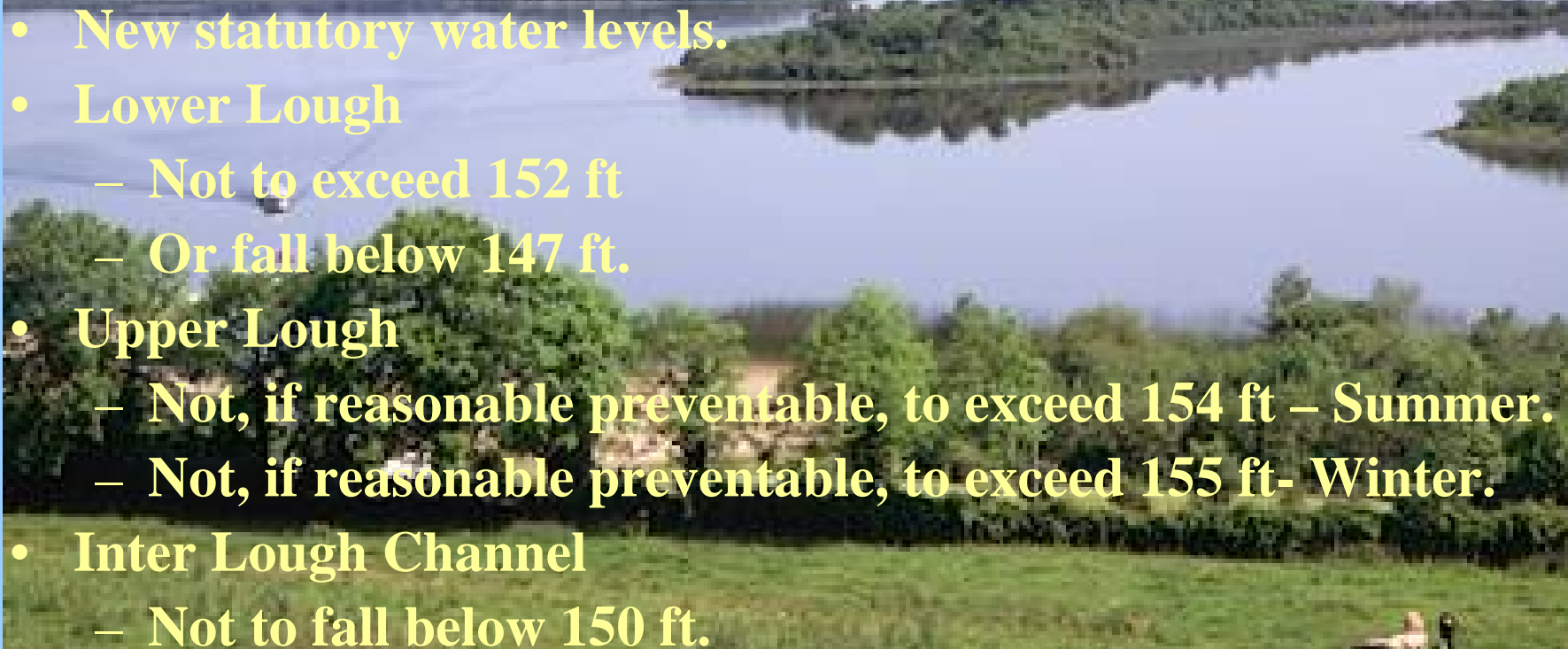
ERNE DRAINAGE and DEVELOPMENT Act (Northern Ireland) 1950

- **Passed on 27th June 1950**
 - **4 miles of channel deepened from Lower Lough to Belleek**
 - **11.5 miles of channel deepened between Upper and Lower Lough Erne**
 - **Sluice gates at Belleek removed and the flow regulated at Cliff.**
- 

ERNE DRAINAGE and DEVELOPMENT Act (Northern Ireland) 1950

- **New control structure constructed at Portora, Enniskillen.**
 - **New dam and hydro power station at Cliff.**
 - **New dam and hydro power station at Ballyshannon.**
 - **Total power output 65 Mw of hydro power.**
 - **Erne Summer Relief Drainage Scheme.**
 - **Drainage Board dissolved.**
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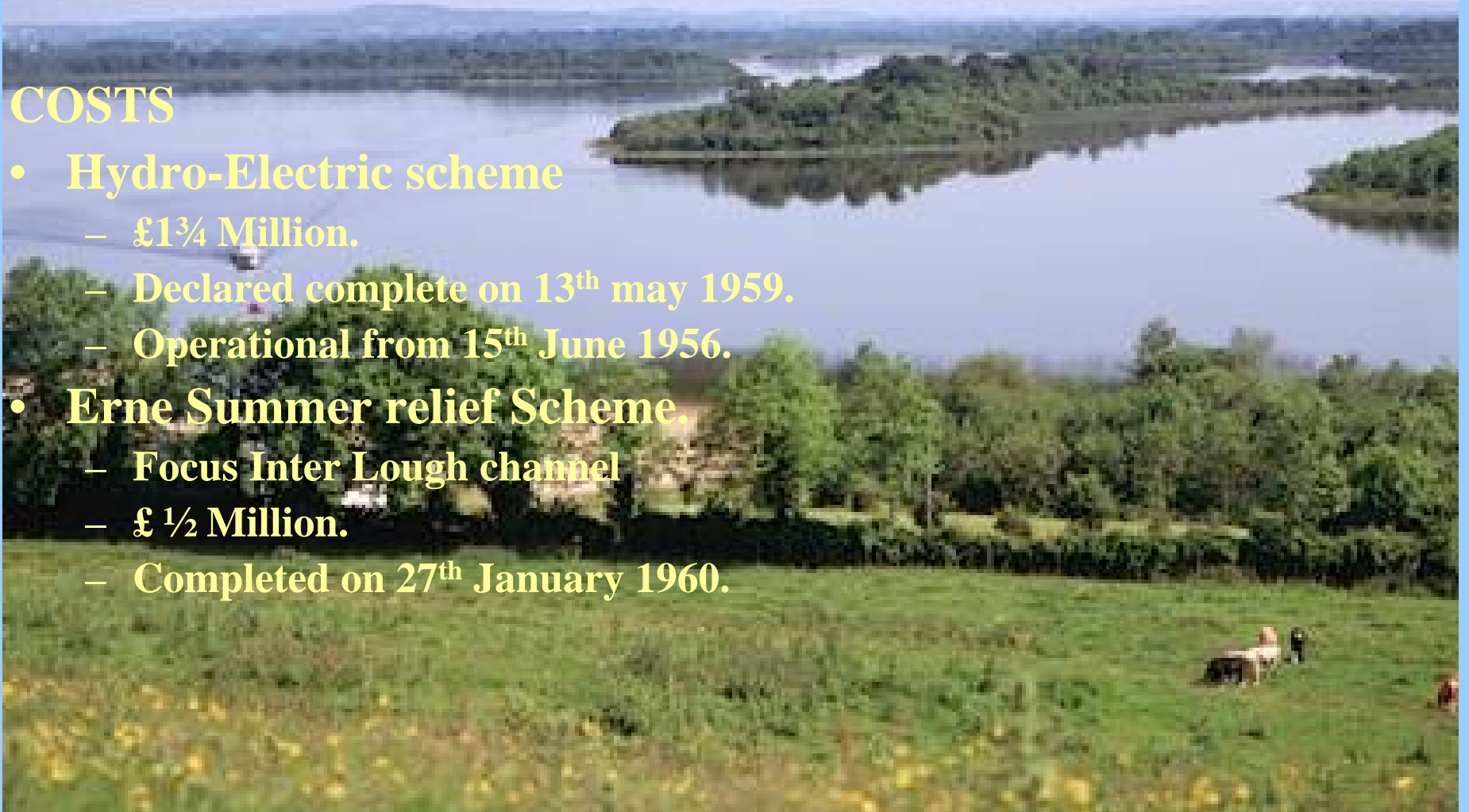
ERNE DRAINAGE and DEVELOPMENT Act (Northern Ireland) 1950

- **New statutory water levels.**
 - **Lower Lough**
 - Not to exceed 152 ft
 - Or fall below 147 ft.
 - **Upper Lough**
 - Not, if reasonable preventable, to exceed 154 ft – Summer.
 - Not, if reasonable preventable, to exceed 155 ft- Winter.
 - **Inter Lough Channel**
 - Not to fall below 150 ft.
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ERNE DRAINAGE and DEVELOPMENT Act (Northern Ireland) 1950

COSTS

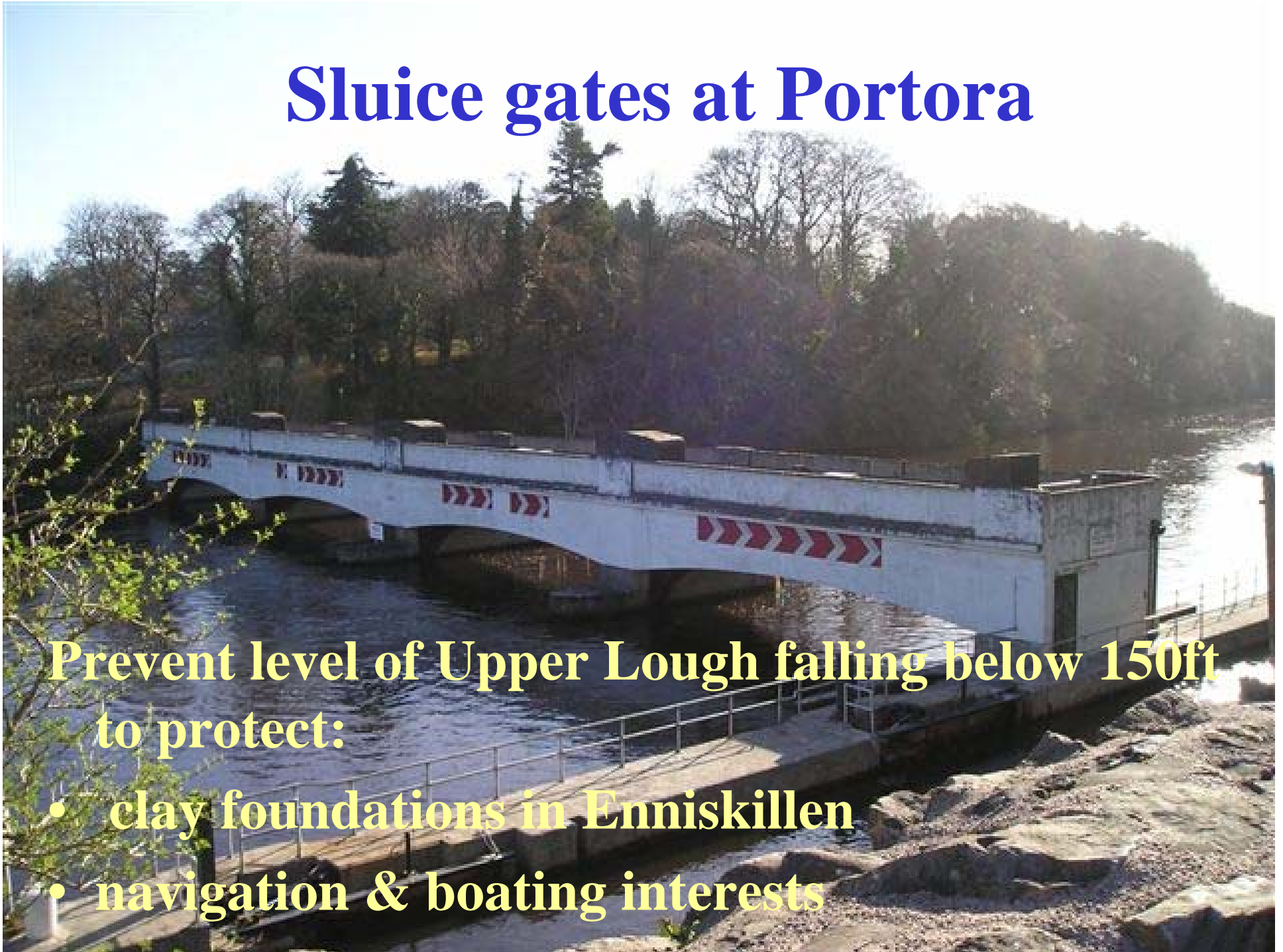
- **Hydro-Electric scheme**
 - £1¾ Million.
 - Declared complete on 13th may 1959.
 - Operational from 15th June 1956.
- **Erne Summer relief Scheme.**
 - Focus Inter Lough channel
 - £ ½ Million.
 - Completed on 27th January 1960.



Sluice gates at Portora

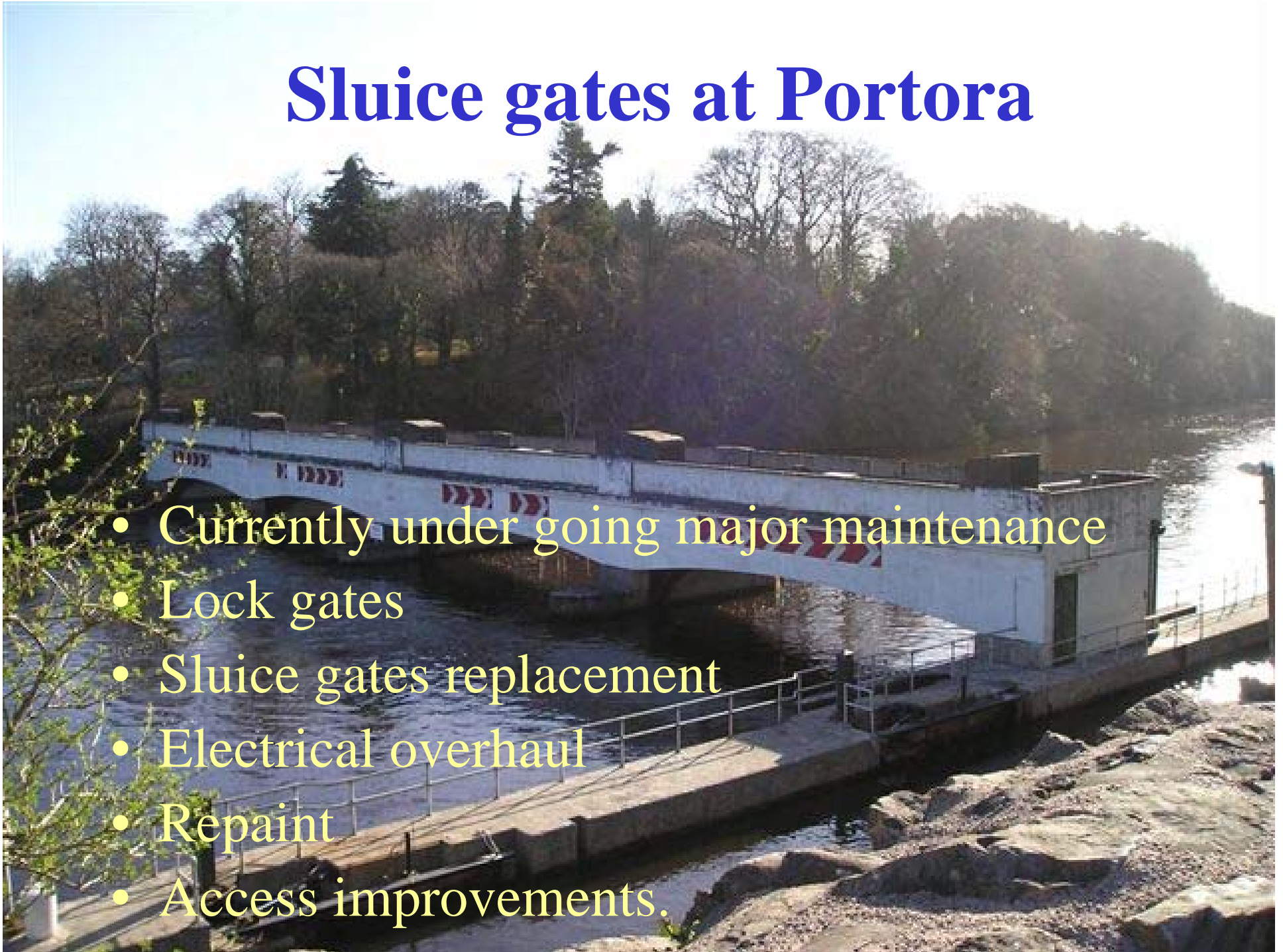
Prevent level of Upper Lough falling below 150ft
to protect:

- clay foundations in Enniskillen
- navigation & boating interests



Sluice gates at Portora

- Currently under going major maintenance
- Lock gates
- Sluice gates replacement
- Electrical overhaul
- Repaint
- Access improvements.



Present Water Level Management



- Prescribed levels from 1950 Act still stand.
- Self imposed operational band
 - 149 to 151 ft for Lower Lough
 - 147 to 152 ft in 1950's Act
- Operational band is in recognition of issues:
 - Drainage – Road and Agricultural Land
 - Flood Risk Management
 - Navigation
 - Fisheries

Hydraulics of the Erne System



- Maximum outlet at Cliff: generating $\sim 200 \text{ m}^3/\text{s}$
- Absolute maximum outlet $\sim 330 \text{ m}^3/\text{s}$
- Maximum inlet recorded $1007 \text{ m}^3/\text{s}$ (1991)

Hydraulics of the Erne System



- An Extreme Event
- Say $900 \text{ m}^3/\text{s}$
- Maximum Outlet of $330 \text{ m}^3/\text{s}$
- $570 \text{ m}^3/\text{s}$ not getting out of system.
- $34,200 \text{ m}^3/\text{min}$
- $2,052,000 \text{ m}^3/\text{hour}$
- $49,248,000 \text{ m}^3/\text{Day}$

Hydraulics of the Erne System



- 49,000,000 m³/Day
- ~150 km² Lough Area
- 0.326m/ day
- 326 mm/day
- Approx 1 ft 1 inch per day

Getting ready for a Biblical flood?

• Report by Chris Donegan

If I were Noah I'd be building an Ark. Not that there is anywhere to float my boat at present because Rivers Agency has been draining Lough Erne, apparently in preparation for a deluge of Biblical proportions.

They have pulled the plug on the lake, and the water from under a fleet of yachts that are now hard aground on the bottom of Goblusk Bay.

According to one old sailor the lake is now so perilously low that any boat still afloat is in danger of hitting rocks that in some cases are now just inches below the surface.

Michael Clarke, from Irvinestown, is calling for a complete rethink of a 60-year-old policy drawn up to try to protect farmland around the Upper Erne from winter flooding to the detriment of boating on what has become "a major recreational waterway."

A spokesman for Rivers Agency confirmed that: "Rivers Agency is responsible for maintenance of water levels in Upper and Lower Lough Erne in accordance with an international agreement with the Electricity Supply Board (ESB) in the Republic of Ireland set out in the Erne Drainage and Development Act 1950."

The cross-Border agreement was drafted when two hydroelectric dams were built on the Erne, at Cliff, just downstream of Belleek, and at Ballyshannon. It stipulates that the water level at Portora, just downstream of Enniskillen, should be maintained at 150 feet above sea level. At 9.30am yesterday

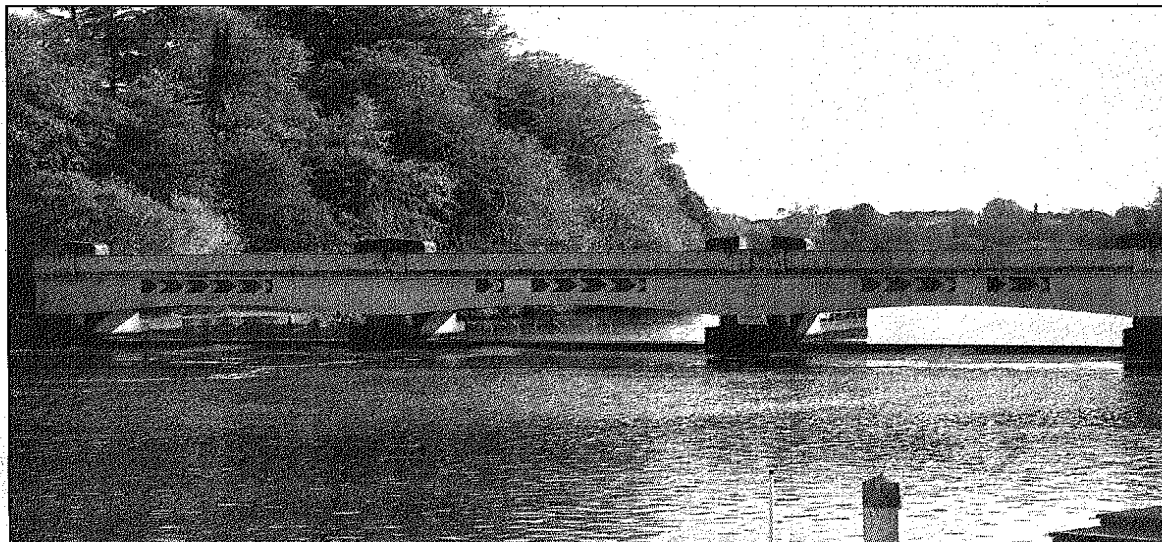
(Wednesday) it was 150 feet and four inches. On the Lower Lough the level should be between 147 and 152 feet above sea level. At 9.30am yesterday it was 149 feet and three inches. The level in the Upper Lough has to be maintained between 150 and 154 feet during the summer period, from April to September, and is allowed to rise to 155 feet in the winter, from October to March. At 9.30am yesterday it was 150 feet and four inches.

Rivers Agency and the ESB use sluices at Portora and at the hydro-electric dams at Cliff and Ballyshannon to regulate the levels. The heavy metal gates at Portora act as a dam and reduce the flow of water from the Upper to the Lower Lough so that anyone trying to get from one to the other by boat has to use a navigation lock.

The Rivers Agency spokesman said: "The gates were last lowered between January 12, 2006, and February 13, 2006. Low rainfall during October 2007 has caused the Lough levels to drop to near the minimum prescribed limit therefore Rivers Agency and ESB have agreed that the most appropriate action was to lower the gates and maintain the Upper Lough at its present level as far as is reasonably practicable."

And like the yachtsmen left high and dry in Goblusk Bay, they often roll their eyes to the heavens.

"Rivers Agency and the ESB closely monitor weather forecasts and lough levels on a daily basis, and jointly agree actions to maintain the levels within the stipulated



The sluices have been lowered at Portora as Lough Erne drops to near "the minimum prescribed limit."

range," the spokesman explained.

"To ensure management within the statutory range and reduce the incidence of flooding during wetter weather conditions in autumn and winter the Lower Lough level is reduced in the autumn to provide storage," he added.

So they pull the plug on the lake and await the gathering storm clouds.

Mr. Clarke believes the agreement on the water levels is well past its sell-by date and that the levels themselves are obsolete. He points out that half a century ago there was little or no recreational boating on Lough Erne but today it is a "completely different situation." It is now a "major

recreational waterway."

He sees no change in policy between the old Drainage Division, "which regarded Lough Erne as a drain," and its successor, Rivers Agency.

"They continue their hostile policy against navigation and their strongly biased policy towards drainage," he maintains.

"The lake level has been lowered an enormous amount. The water has been dropped about three or four feet as far as I can make out. It has happened within the last 10 days or so," he says.

"It's something they do practically every October," he adds.

The result: a fleet of 10 Yoeman 23 feet long yachts grounded alongside the jetty

at the Lough Erne Yacht Club just as they were preparing for a revival in autumn sailing.

Mr. Clarke reckons it is King Canute folly to try and turn the tide on the annual flooding of farmland around the Upper Erne because it is drained and reclaimed lakebed.

He also questions the relevance of the 150 feet marker, suggesting it was set simply for cosmetic reasons because it was just the right level to keep the ends of the sewer pipes around Enniskillen hidden beneath the surface!

"Half a century ago Lough Erne, in the eyes of the public administrators, was a drain, not a navigation. They set those levels in

a drainage context," he maintains.

"Now 50 years later we have Waterways Ireland trying to look after the navigation; hundreds of boats trying to use Lough Erne; Lough Erne and its navigation is now hugely important. Patently that whole business of how low they can go to improve the drainage is obsolete," he argues.

Mr. Clarke says lowering the lake to such an extent compromises safety because rocks that are normally covered by six feet of water are now just a couple of feet below the surface.

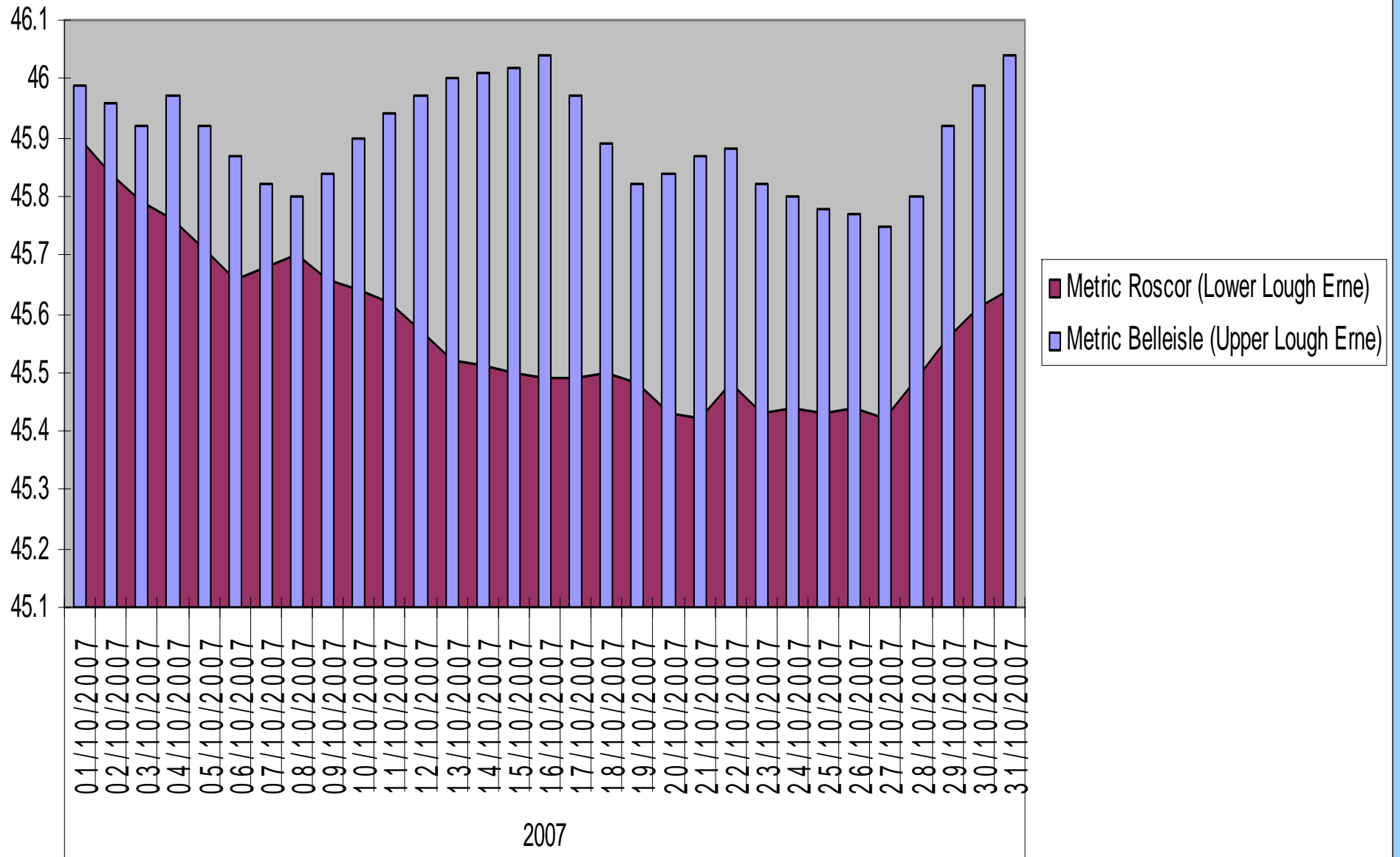
"Lower the lake by four or five feet and there is a danger of hitting them," he warns.

Water levels

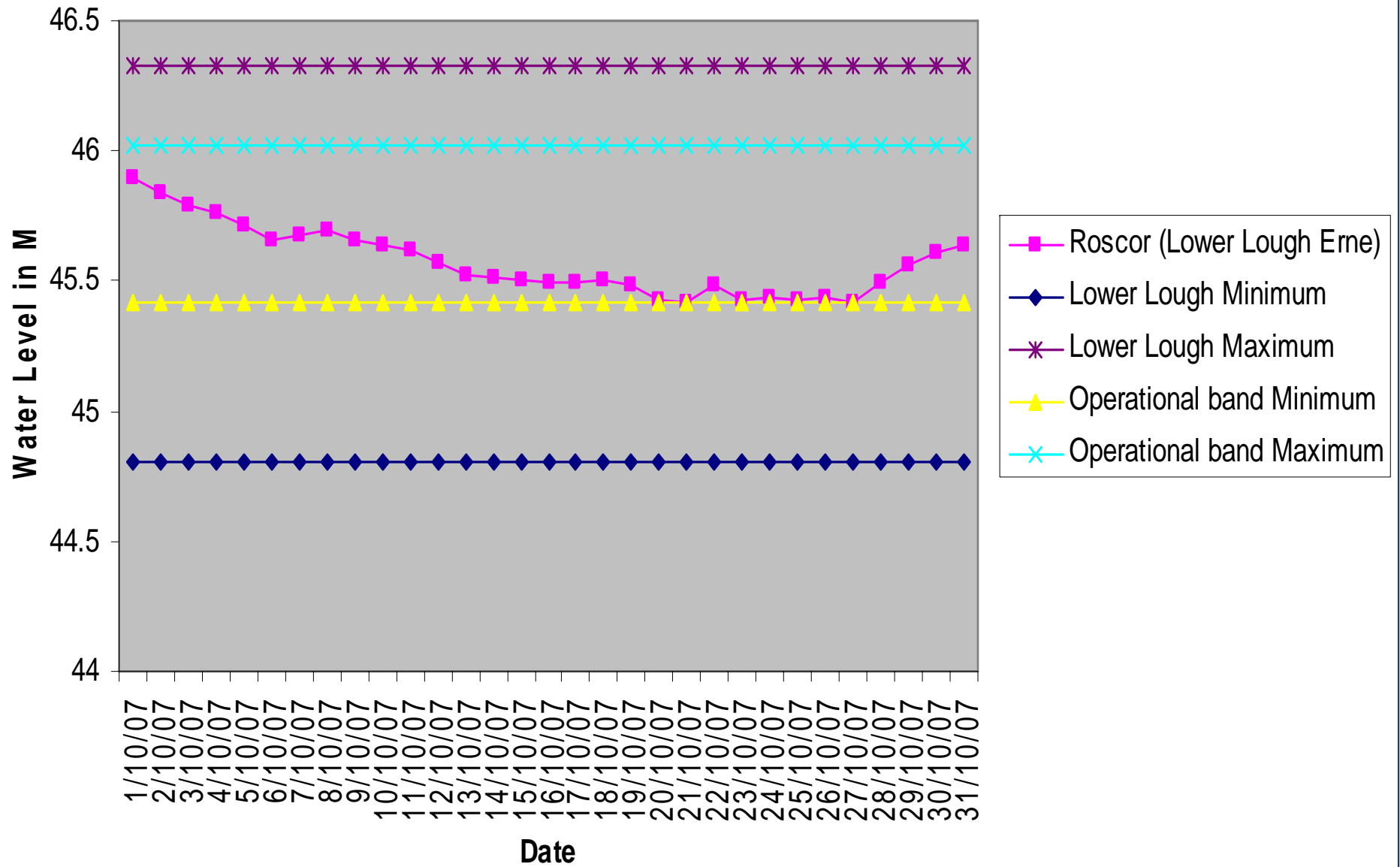


- What happen this October?
- How quickly did the level go down?
- Did we breach any prescribed level?
- Did we breach our operational band?
- Are the levels lower than in previous years?
- What other factors influence the Lough levels?

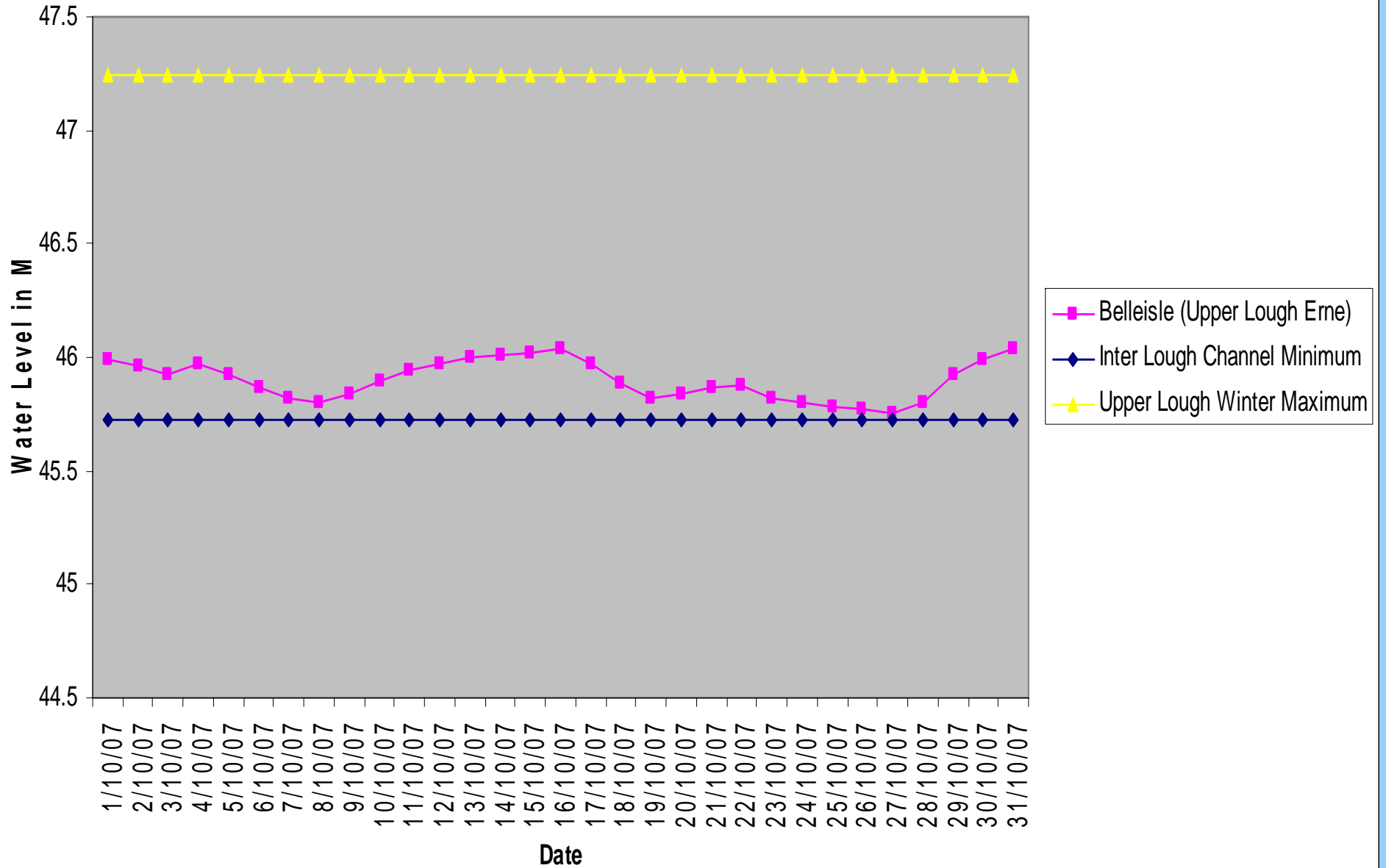
Levels October 2007

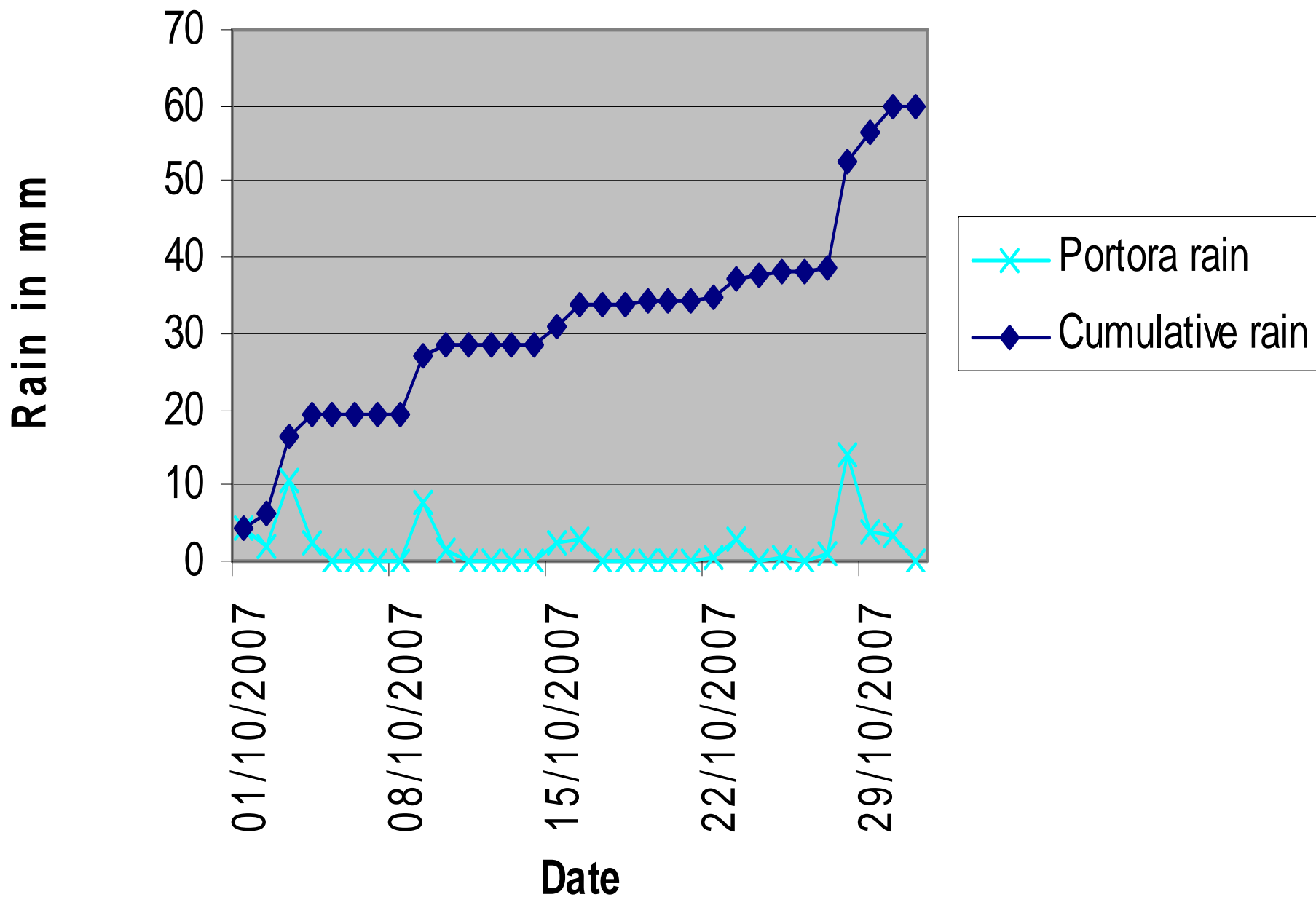


October 2007 Lower Lough Erne Levels



October 2007 Upper Lough Erne Levels





Lowest October level in Lower Lough

148'9"	10 October 1998
149'11"	29 October 1999
149'5"	25 October 2000
149'4"	27 October 2001
149'0"	18 October 2002
148'11"	31 October 2003
150'0"	30 October 2004
150'7"	22 October 2005
150'3"	19 October 2006
149'0"	21 October 2007