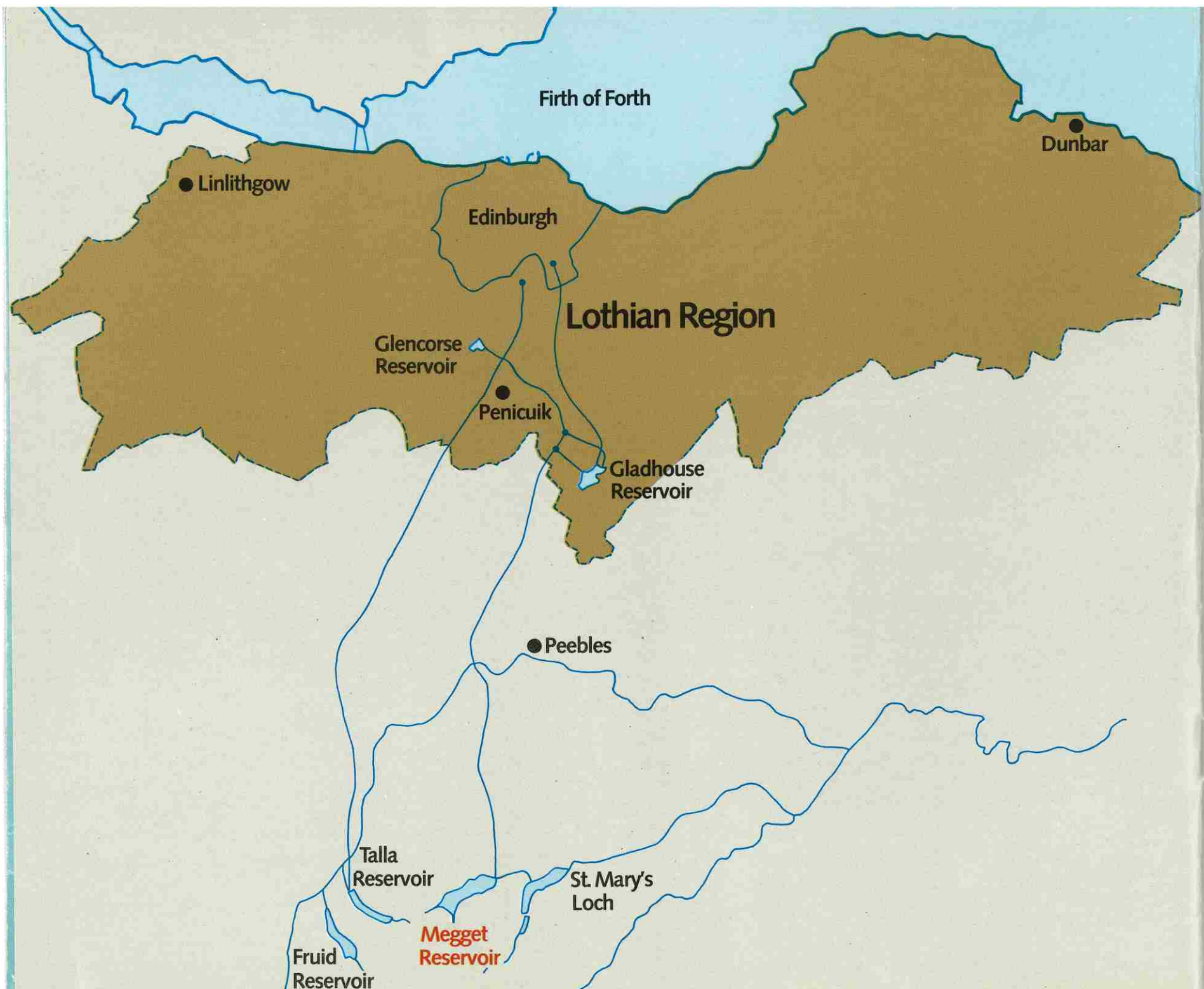


# MEGGET WATER







**T**he opening of the Megget Reservoir marks an important new milestone in the development of the water supply system for the Lothian Region.

With its completion, and together with the existing network of reservoirs and aqueducts, the water needs of an area occupying approximately 2,000 square miles are guaranteed well into the 21st century

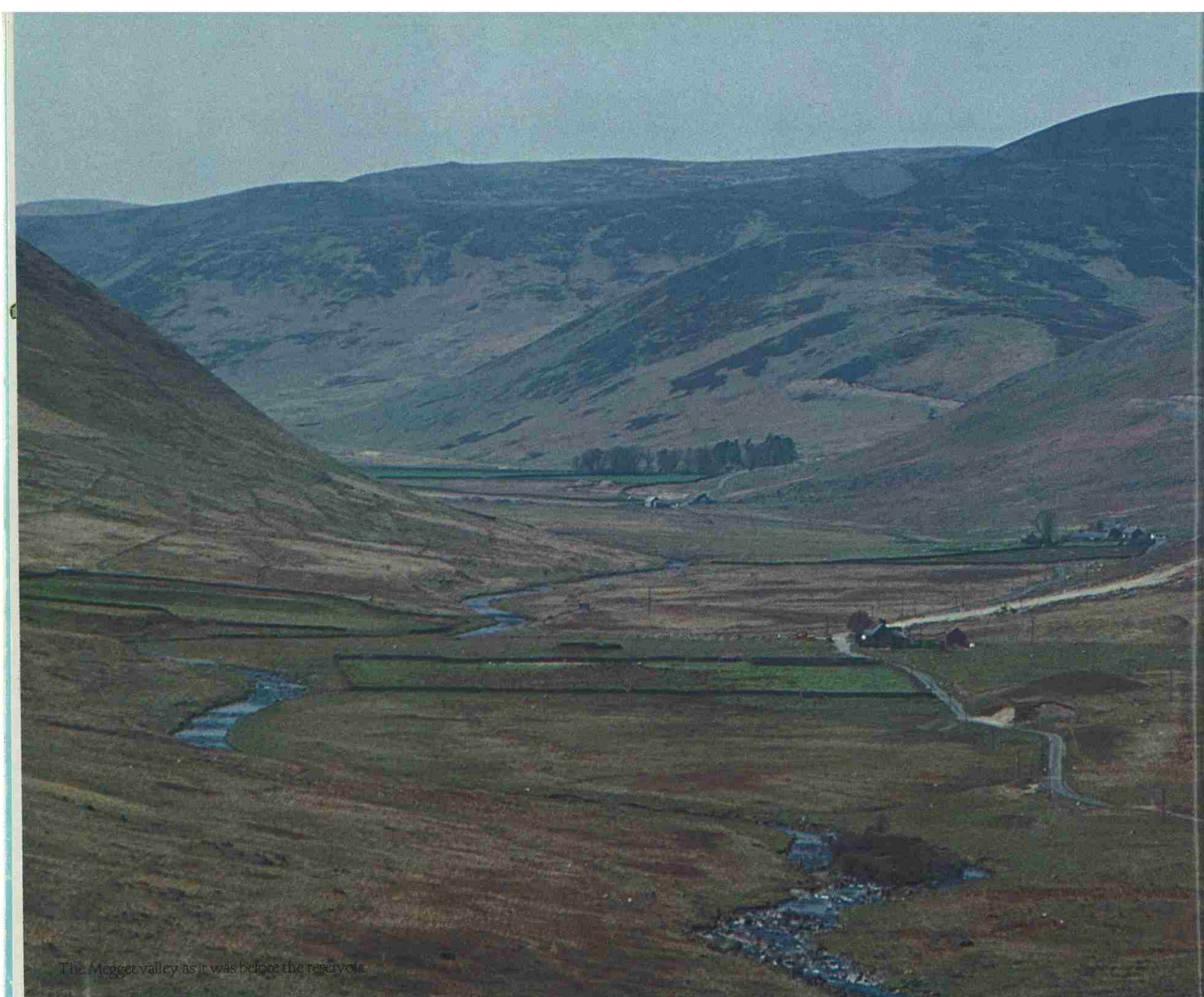
The story of Megget, however, is not simply the story of supply meeting demand.

As with all reservoirs, it is a story of impressive engineering carefully balanced within its environment.

This booklet tells the Megget story from all points of view.



Water supply in the Lothian Region has come a long way since 1676 when Edinburgh became one of the first cities in Britain to introduce a public water system.



The Megget valley as it was before the reservoir.



# A water supply to meet future demands.

The availability of water is something we all take for granted—at home, at work and at play.

In looking to the future water needs of the area well into the 21st century, the Lothian Regional Council had to consider a scale of supply equivalent to no less than 400 litres per person per day.

As the Lothian Region is nowhere near self-sufficient in the water resources it requires, this future target had to be met, as always, from farther afield.

The Region was already relying on a well-established system of reservoirs extending as far as 40 miles south of Edinburgh in the upper reaches of the River Tweed.

The Regional Council found, in the Megget valley, what it considered to be the best location for a new reservoir to supplement the existing water supply, and meet the future demand.

The wide U-shaped valley of Megget, formed by glacial action, had the advantage of being big enough to hold the amount of water required, in a location that facilitated linking it up with other existing reservoirs.





Megget valley with dam under construction.



# The making of Megget.

To accommodate the future water requirements of an area the size of the Lothian Region, you not only have to look well-ahead. You have to plan well-ahead.

The Megget Reservoir Scheme was first considered as long ago as 1963.

The Water Order—necessary before any reservoir can be constructed—was granted in 1974 by the Secretary of State.

In 1976 work began on phase one of a two-phase operation that would culminate in a reservoir that alone would provide more than half the Lothian Region's water requirements beyond the year 2000.

Megget Reservoir.

## PHASE ONE: 1976-83

This was the most complex and challenging of the two phases, involving as it did □ the construction of the highest impounding embankment dam

in Scotland to date □ outlet and overflow works □ 28 miles of tunnel, underground pipelines and aqueducts □ the construction of 3 miles of new road higher up on the valley side to replace the public road along the valley floor □ and the initial flooding of the area. Total cost: £48 million.

The dam is an impressive feat of engineering, rising some 56 metres (181 ft.) above the valley floor and stretching, at its crest, some 570 metres across (⅓ mile).

Good use was made of local materials: over 2 million cubic metres of gravel from the existing valley bed was employed in the construction of the embankment. Some of the stone to make concrete was quarried from the valley.

The rock foundation of the dam has been sealed by cement grouting to form a cut-off curtain to prevent water leaking under the dam.

A concrete inspection gallery, running the whole length of the dam, sits inside the dam on top of the concrete cut-off plug.

A central impermeable core has been formed using a vertical asphaltic concrete membrane 600/900 mm thick to make the dam watertight.

The upstream face of the dam embankment is protected with a covering of rock, the crest and downstream face sown with grass.

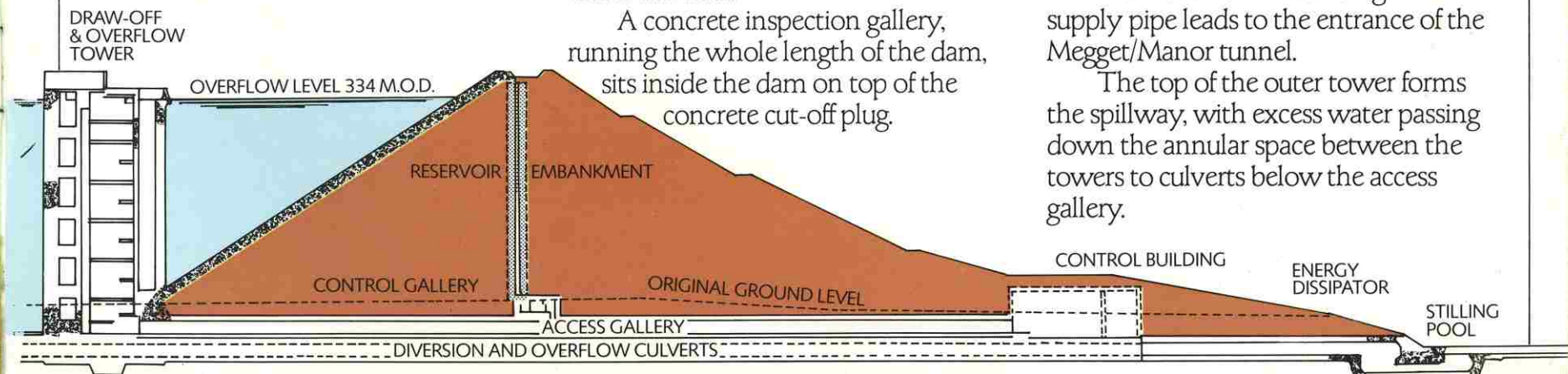
The outlet and overflow works take care of the water supply from the reservoir and the excess water when the reservoir is full.

These take the form of two concentric concrete towers.

The inner tower houses the draw-off pipework and valves. The draw-off pipework is connected to two 1.5 metre diameter pipes, located on either side of the access gallery, and runs from the draw-off tower under the embankment to the control building at the downstream toe of the embankment.

From the control building the main supply pipe leads to the entrance of the Megget/Manor tunnel.

The top of the outer tower forms the spillway, with excess water passing down the annular space between the towers to culverts below the access gallery.







Megget valley—dam completed and grassed.





At the end of the culverts, an energy dissipator and stilling pool reduce the force of the water and allow it to flow gently down Megget Water.

A system of tunnels, aqueducts and pipelines convey the water from the reservoir into the Lothian Region.

From the Megget valley the water is taken under the Tweedsmuir Hills, by way of a 2.5 metre diameter circular concrete-lined tunnel a distance of 7.8 kilometres, into the Manor valley.

From the tunnel outlet, the water continues through an 1100 mm diameter ductile iron water pipe, down the Manor valley, under the River Tweed at Lyne Station, through the Meldon Hills and into the Lothian Region's existing reservoirs at Gladhouse and Glencorse.

The length of pipework involved is 38.6 kilometres of 1100 mm diameter pipe and 9.2 kilometres of 900 mm pipe.

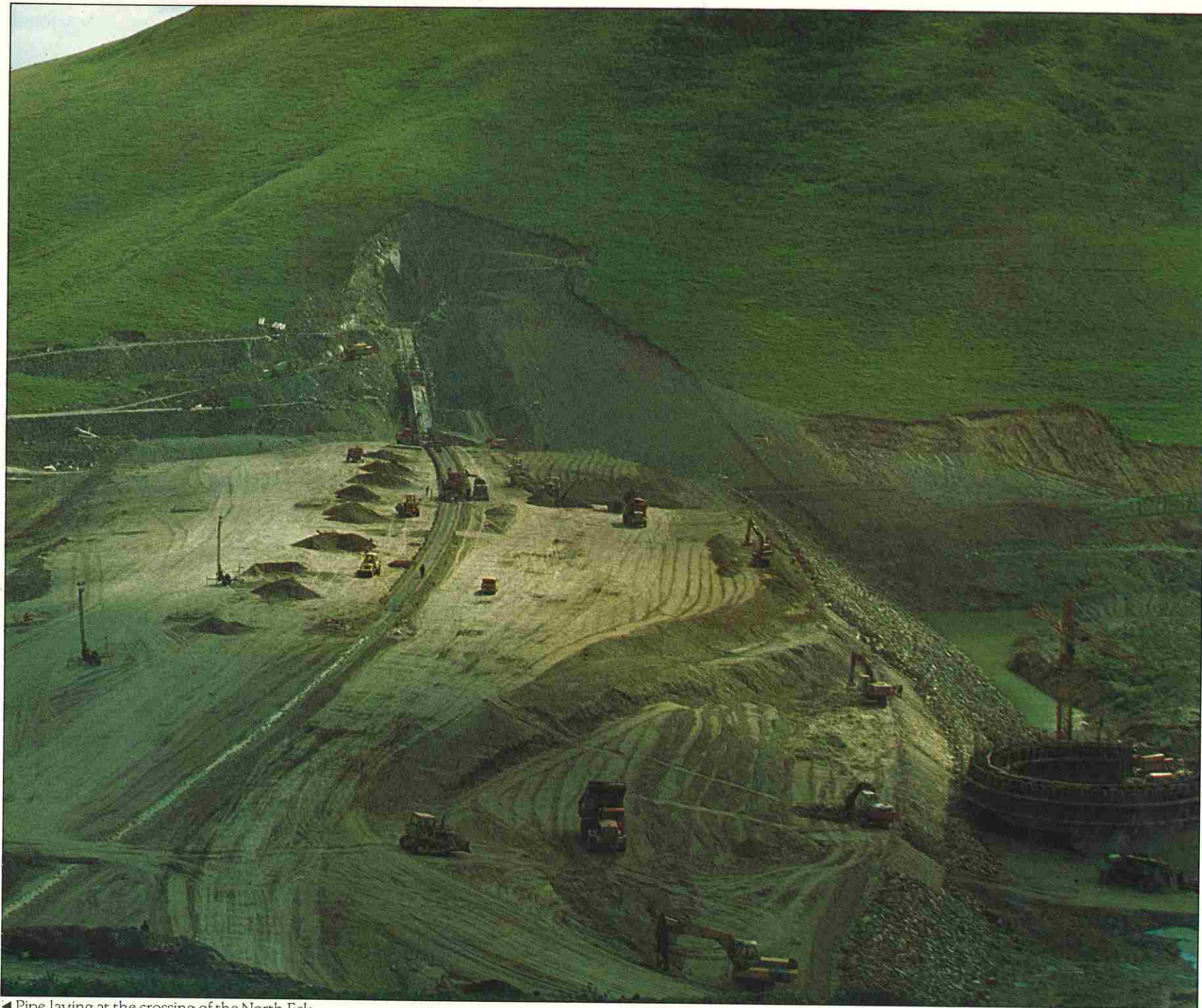


Controlling the reservoir Left: Control tower under construction. Right: Inside control building.









◀ Pipe-laying at the crossing of the North Esk

Dam under construction



## PHASE TWO.

Towards the turn of the century, when the demand for water requires the supply to be further increased, the second phase of the Megget Scheme will proceed, enabling the output to be doubled from 102,500 to 205,000 cubic metres per day.

This will involve the construction of a pumping station and pipeline in order

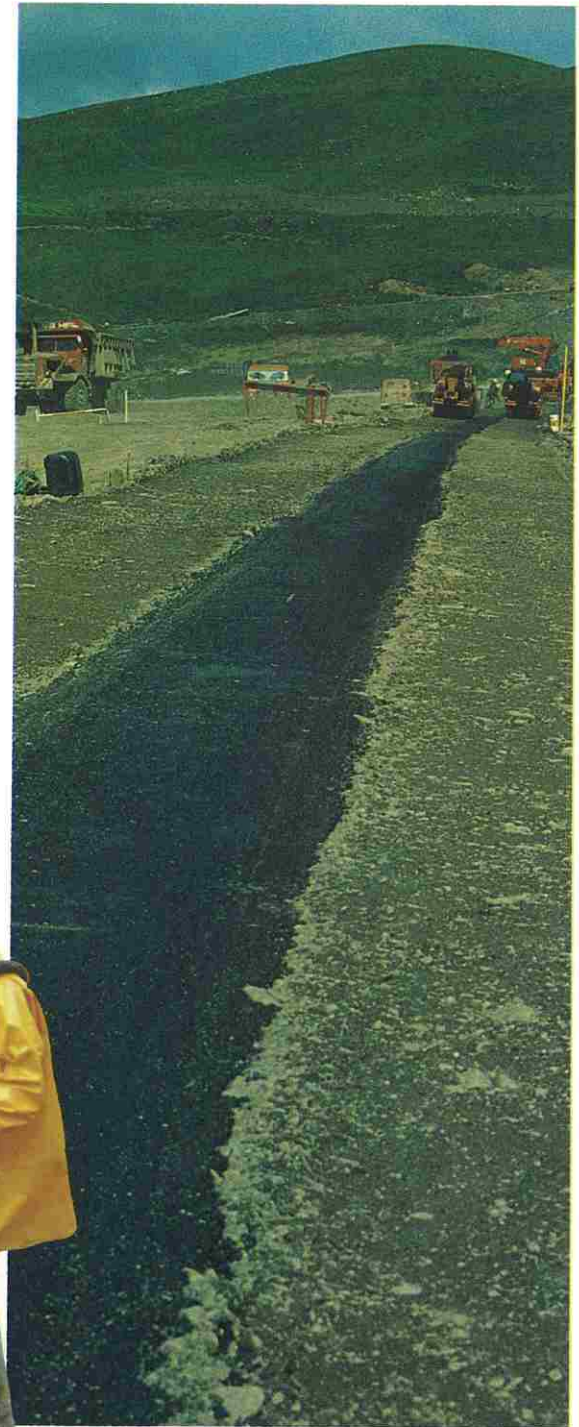
to pump water from St. Mary's Loch into the Megget Reservoir. The existing aqueduct from Manor into the Lothian Region will require to be duplicated.

## COMPENSATION WATER.

An essential pre-condition to the construction of an impounding reservoir is the agreement to provide 'compensation water' to ensure adequate flows in the rivers downstream of the dam.

Extensive consultation with all the authorities concerned produced a complex set of rules for discharging water from the reservoir; these ensure continuous adequate flows in the Megget and Yarrow Waters in all seasons and provide, as required, additional flows to assist the fishing interests in the river system below the dam.

The Megget dam ensures a good flow in the rivers even during prolonged dry spells.



Laying the central impermeable core in the dam.



From rough to smooth: the two stages of tunnelling and the machine that made it all possible.





# Megget Reservoir:

## THE FACTS.

### CATCHMENT AND YIELD

St. Mary's Loch

total catchment 10,870 ha (26,850 acres)

Direct reservoir

catchment 4,000 ha (9,870 acres)

Average annual

rainfall 1,767 mm (70 inches)

Estimated yield—

Stage 1 102,500 cu.m/d

Stage 2 102,500 cu.m/d

Total 205,000 cu.m/d

### RESERVOIR

Area of water

surface 259 ha (640 acres)

Capacity 61,400,000 cu.m

Top water level 334 m O.D. (1,095.5 ft)

### EMBANKMENT

Maximum

height 56 m (181 ft)

Crest length 568 m (1,863 ft)

Total volume 2,100,000 cu m  
(2,700,000 cu yds)

### SPILLWAY

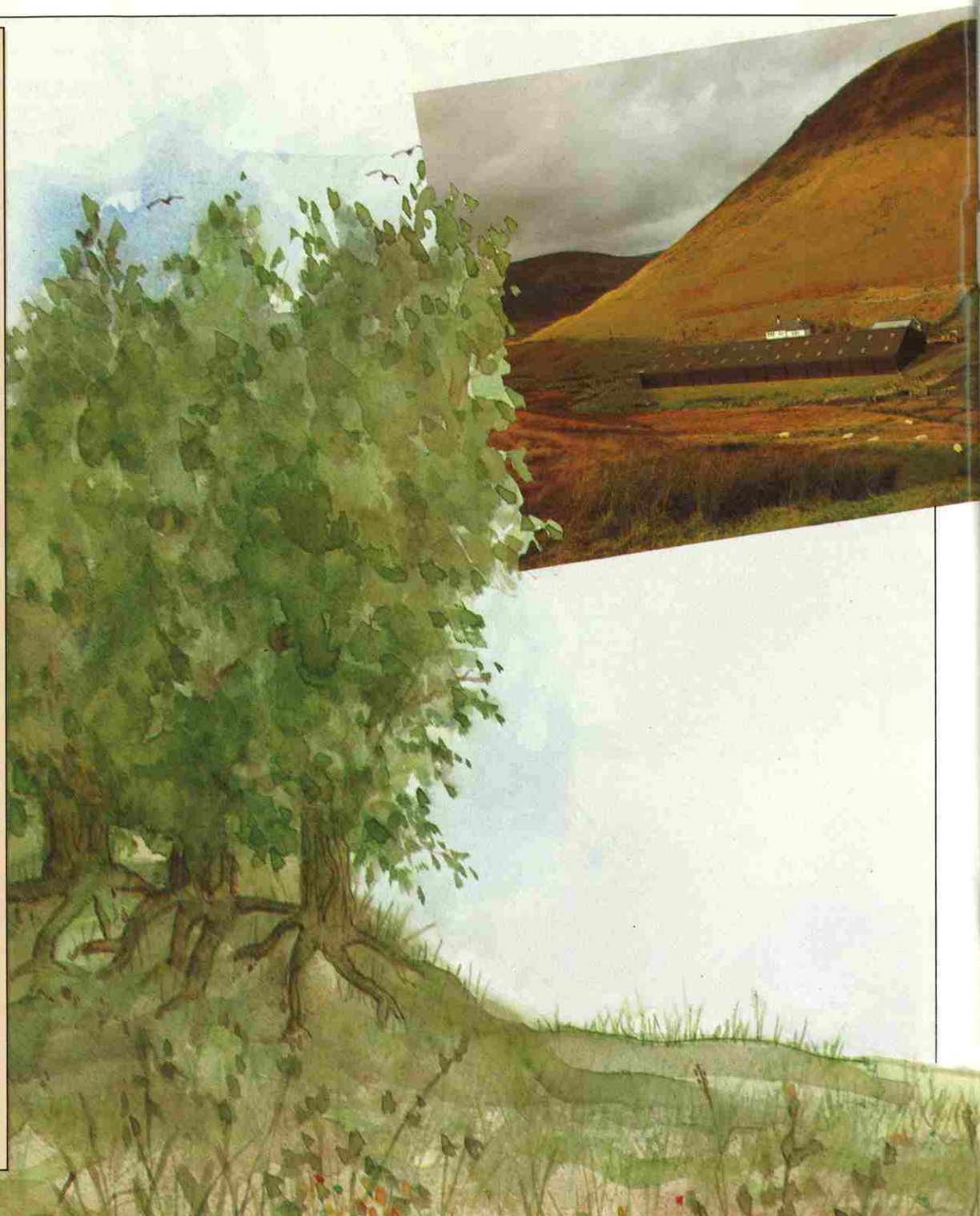
Crest length 52.5 m (172 ft)

Design flood 210 cumecs  
(7,400 cusecs)

Head over weir 1.7 m (5.6 ft)

### COST OF PHASE ONE

£48 million.





# Engineering and environment.

## A question of balance.

In the construction of reservoirs, environmental considerations require that they should blend in with the surroundings in which they are created.

Reservoirs, quite simply, must have a sense of place.

In the making of Megget, allowances had to be made for everything from the physical characteristics of the reservoir dam, the traditional land use of the valley, to the general look and landscape of the immediate surroundings.

Engineering and environment had to balance.

### MAKING THE DAM A PART OF THE SCENERY.

Every effort has been made to make the dam wall at Megget appear as natural as the surroundings in which it is sited.

In its early days the external view of the dam is one of a rather unusual, yet very striking, large and grassy 'curtain'

across the valley. However, the planting of trees around the ends of the dam, and of indigenous grasses, herb and shrub vegetation the length and height of it, will make the future picture softer and more discreet.

The use of trees and shrubs at the water's edge will help to soften the visual impact of the new reservoir against its established surroundings.

### KEEPING THE LAND WORKING ITS TRADITIONAL WAY.

The Megget valley, before the reservoir, had provided grazing for 5,000 sheep, with the land in the valley floor used for crops and winter grazing.

The Megget valley, now that the reservoir is here, has lost none of its traditional uses.

Through the creation of new plantations on the valley sides, and new steadings, the valley can still support the

same number of sheep with over-wintering for them in severe weather within the new steadings.

To replace the shepherd's houses built in the valley floor early in the 19th century, four new houses have been built higher up the valley sides.

### LOCAL COLOUR.

Where new buildings have been introduced into the scenery, great care has been taken with materials, colours and textures so that they blend in with their surroundings.

Every effort has been made to shape the edges of plantations and groups of trees with the natural contour of the land.

Where fence lines are rectilinear, the planting edge is designed, again, to follow land contour, rather than fence.





# The valley known through history as Meggetland.

What was life in the Megget valley like before the reservoir?

The further you look back, the more fascinating the picture that is drawn.

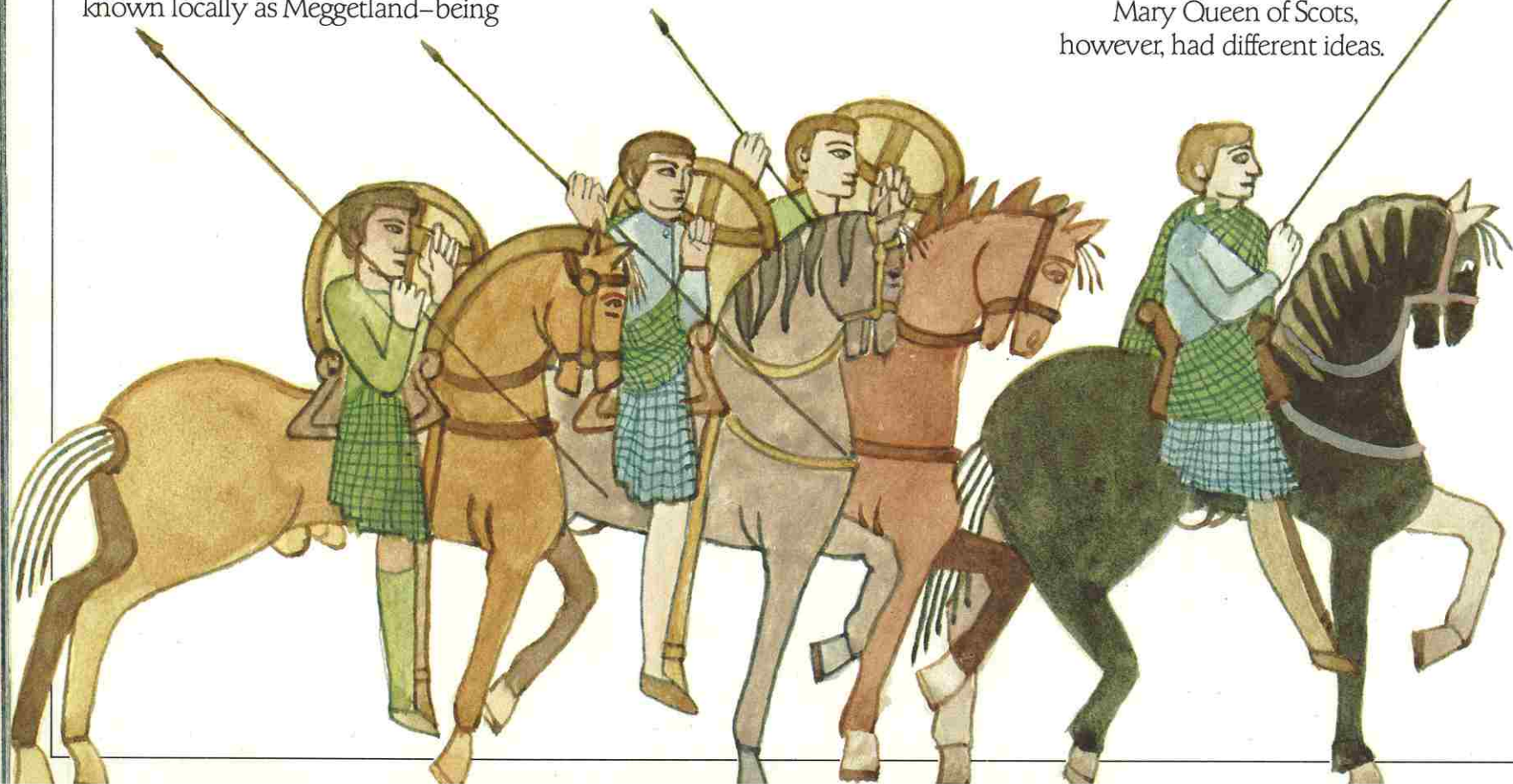
Accounts as early as the 12th century tell of the Megget valley—known locally as Meggetland—being

part of the Ettrick Forest hunting preserve created by David I when he established a royal manor at Selkirk.

It was in the pursuit of deer that Meggetland proved especially popular over the next four centuries.

James V was known to avail himself of the pleasure on frequent visits. (He also found Megget particularly handy as a base for launching raids against the border rebels of Linnsdale and Eskdale.)

Mary Queen of Scots, however, had different ideas.





Towards the end of the 16th century, fearing for the future survival of the deer, she ordered hunting to stop.

### GOLD!

In the same century, the pursuit of something altogether different was to prove popular—gold!

Prospecting for gold is known to have occurred on the banks of the Glengaber Burn, the stream apparently diverted through sluices to pan the gold, with the banks excavated in small-scale mining operations.

Unfortunately, there is nothing to suggest that you would find gold in the valley today—and you'd have to go under several feet of water to find it anyway!

### DEFENSIVE TOWERS.

An idea of how the valley defended itself can be glimpsed at the Cramalt car park on the road bordering the reservoir.



King James V.

Mary Queen of Scots.



Here you will see the surviving remains of one of two towers which stood at a strategic point (Cramalt) that afforded good views along the valley, and which date back to the 15th century.

Evidence suggests that both towers were at least three stories high, the only border tower castles higher being those of Neidpath and Newark.



Artist's impression of early border tower.



# Megget Reservoir: here to be enjoyed.

One of the great successes of Megget is that you can enjoy it for reasons totally unrelated to its function.



The creation of a reservoir has added to the character of the valley.

The introduction of water has softened its overall appearance and there is a new, more pleasing, scale to hills and general surroundings.

The reservoir has been stocked with trout: the keen fisherman, equipped with

a permit, can launch himself into a very rewarding day's fishing—a boating complex has been established at Linghope to provide all the facilities necessary for a fisherman and his family.

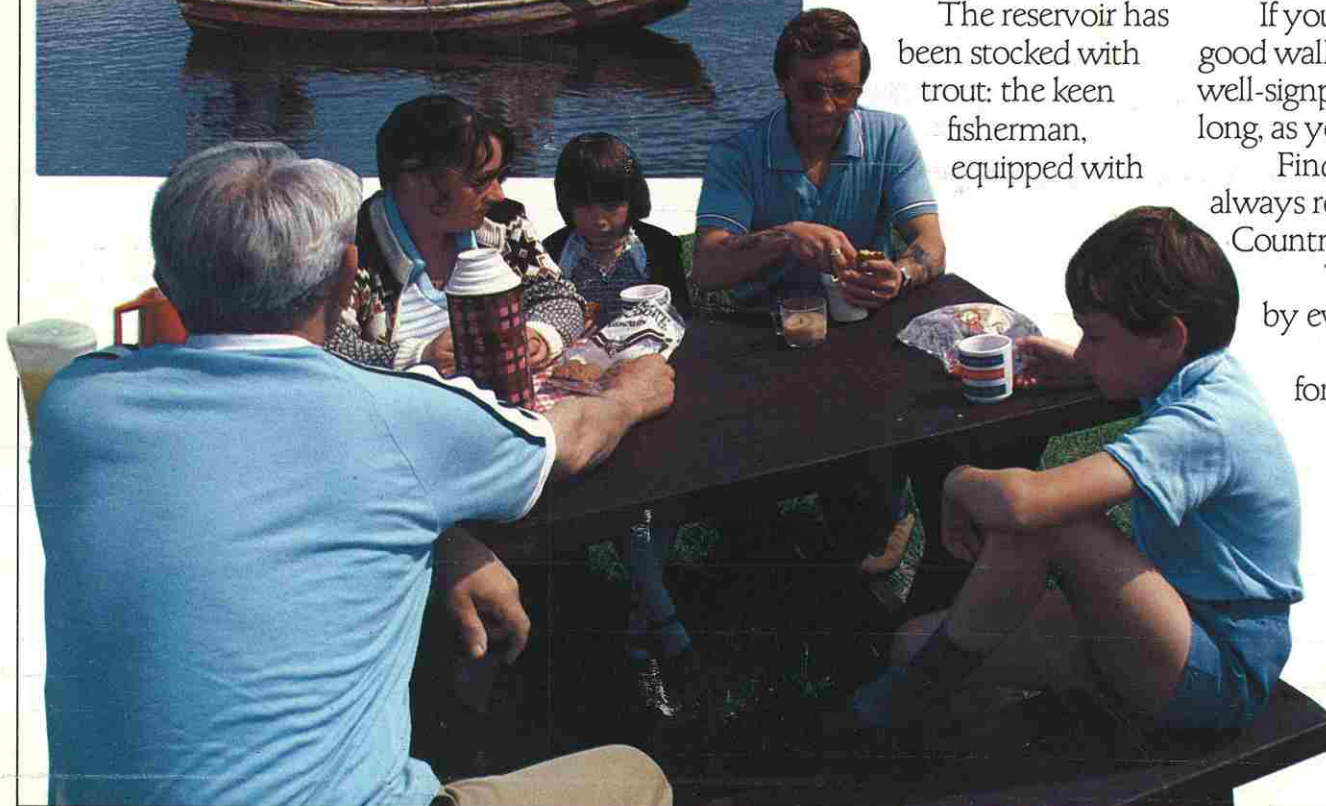
Informal car parks and picnic sites are situated around the reservoir with viewpoints and information boards.

If you like nothing better than a good walk, Megget is a natural—with well-signposted routes as short, or as long, as you wish.

Find your way around Megget, always remembering to follow the Country Code.

There is much to be enjoyed by everyone in Megget.

Make sure not to spoil it for others.





# Megget Reservoir

—financed in part by a grant from the Regional Development Fund of the EEC and a loan from the European Investment Bank—

## OFFICIALLY OPENED

Friday 30th September 1983 by Convener Brian A Meek OBE JP

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### LOTHIAN REGIONAL COUNCIL

CONVENER

BRIAN A MEEK OBE JP

VICE-CONVENER

IAN A CRAMOND JP

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### MEMBERS OF WATER AND DRAINAGE COMMITTEE 1983

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COUNCILLOR IAN J BERRY JP

Cllr D R W Alexander	Cllr W Drummond	Cll Rev R C Morton	Cllr W J Stoddart
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	Cllr D W Martin	Cllr K A Simpson	

PAST CHAIRMEN

Cllr A Bell JP (May 75-Jan 76)

Cllr W Hanlon (Jan 76-May 82)

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### OFFICIALS

CHIEF EXECUTIVE  
R G E Peggie

DIRECTOR OF WATER SUPPLY SERVICES  
J P Williamson

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### CONSULTING ENGINEERS

Robert H Cuthbertson and Partners, 13 Eglinton Crescent, Edinburgh EH12 5DS

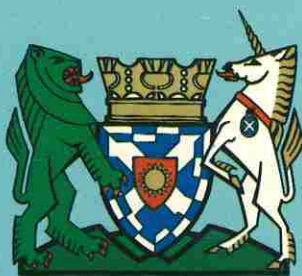
### ARCHITECTS—GENERAL AND LANDSCAPE

W J Cairns and Partners, 16 Randolph Crescent, Edinburgh EH3 7TT

### MAIN CONTRACTS/CONTRACTORS

Megget Dam _____	Whatlings (Civil Engineering) Ltd.	Aqueducts/Pipe Supply _____	Stanton and Staveley Ltd.
Megget/Manor Tunnel _____	Edmund Nuttall Ltd.	Aqueducts/Valve Supply _____	Glenfield & Kennedy Ltd.
Manor/Tweed Aqueduct _____	William Tawse Ltd.	Aqueducts/Pump Supply _____	Weir Pumps Ltd.
Tweed/Gladhouse Aqueduct _____	William Tawse Ltd.	Road Diversion _____	Rodger (Builders) Ltd.
Rosebery/Glencorse Aqueduct _____	Lilley Construction Ltd.	Houses and Steadings _____	James Swinton & Co. Ltd.





# Lothian Regional Council.

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