

LODES - GRANTA GROUNDWATER SCHEME



NRA

*National Rivers Authority
Anglian Region*



The Lodes-Granta Groundwater Scheme is designed to improve the water environment to the north and east of Cambridge and at the same time provide more water to meet increasing public demand in a rapidly expanding part of the country.

INTRODUCTION

Towns and villages in this part of Cambridgeshire get their water supplies from the chalk which outcrops in the eastern part of the basin of the River Great Ouse. In spite of the predominantly agricultural nature of the area it has seen substantial residential and industrial development in the last 20 years and this has put pressure on existing sources of supply.

In the past it was possible to develop new borehole sources in the chalk as and when required but since the early 1970s it has been necessary to have a management plan for the area to ensure that increased abstraction does not have an adverse effect on the aquatic environment of the river system.

This plan, known as the Great Ouse Groundwater Scheme, involves managing the chalk aquifer (a natural underground reservoir) in such a way that additional water can be taken from the chalk not only for public supply and local agricultural needs but also to preserve river flows at levels sufficient to improve river water quality and maintain local amenities. The Lodes-Granta is an extension of this scheme.

THE AREA

The area extends over more than 608 sq. km. from the River Granta, south of Cambridge, northwards towards Newmarket and the high level water courses known as the Cambridgeshire Lodes.

An area with a traditional East Anglian landscape of small villages scattered across an intensively farmed environment, it sits on a bed of chalk which provides a natural source of high quality water drawn mainly from boreholes.

Extensive abstraction of water takes place within the district and on occasion, for example when there is low rainfall, the flows in rivers, streams and some of the Lodes can be affected. For a number of years there has been some local concern about flows in local rivers and watercourses and this has been addressed in the development of the scheme.

The area is also environmentally sensitive. In addition to the general quality of the landscape and water environment there are a large number of Sites of Special Scientific Interest including Chippenham Fen (114 hectares), Wicken Fen (247 hectares) and Fulbourn Fen

(26 hectares) all in Cambridgeshire. Many of these important wetland sites rely on the careful management of the local chalk aquifers for their continued conservation.

THE SCHEME

Objectives

The National Rivers Authority Unit is responsible for managing, protecting and improving the water environment and this scheme is a practical example of how these objectives can be achieved:





Management - the scheme ensures that the needs of the whole of the water environment are taken into account and that a balance is maintained between the level of abstraction and the conservation of amenities.

Protection - this extends from the protection of sensitive areas such as Sites of Special Scientific Interest and the river environment to the maintenance of public water supplies.

Improvements - these stem from enhanced flows in local rivers and watercourses with a consequent increase in river water quality.





allow increased abstraction by the Cambridge Water Company and Anglian Water from specified sources.

Under the scheme no additional water is being taken for public supply until the river support facilities are provided.

THE BENEFITS

The advantage the scheme are:

- river flows are improved resulting in a general enhancement of the water environment; river water quality is improved because of better flows and increased dilution;

INVESTIGATIONS

As part of a comprehensive review of the water needs of the area the NRA undertook an intensive investigation into the feasibility of a number of options ranging from doing nothing to developing sources of supply outside the area.

This task involved evaluating about 35 computer model simulations of what would happen with specific options and has drawn upon a wealth of data collected as a result of:

- drilling and test pumping boreholes;
- measuring flows in rivers and streams;
- mapping the geology and hydrology of the area;
- identifying wetlands and groundwater discharges.

Sophisticated methods of analysis were developed as part of the investigative programme so that detailed information could be provided to the Cambridge Water Company and Anglian Water (the main abstractors) and to conservation and environmental interests. Computer modelling work was carried out in conjunction with the Department of Civil Engineering, Birmingham University.

The end result of this exhaustive appraisal and consultation exercise was to develop a *preferred option* which centres on the *limited* development of the aquifer and extensive support for local rivers. This option will serve to balance the development of resources with conservation and environmental requirements whilst protecting the interests of existing water users.

THE PREFERRED OPTION

Costing about £2.4 million this option involves developing six river support boreholes and the associated pipelines and outfalls to take the water to local streams and rivers. This will maintain river and environmental needs and

- the environmental needs of important ecological sites (e.g. Chippenham Fen) are met and the balance of other wetland sites of special scientific interest will be maintained;
- increased abstraction for public water supply is managed in a coherent and responsible manner.

TIMESCALE

The scheme was approved in 1989 and the Granta section started in 1990 was completed two years later. The Lodes element will be completed by 1994.

