

# Middle Level Commissioners



St Germans Pumping Station



*“Working to protect life and property  
from flooding”*

# **MIDDLE LEVEL COMMISSIONERS**

## **Introduction**

The Middle Level is the central and largest section of the Great Level of the Fens, which was reclaimed by drainage during the mid-17<sup>th</sup> Century. The area is bounded to the north-west and east by the Nene and Ouse Washes, to the north by the previously drained Marshland silts and to the south and west by low clay hills.

The main water level management function within this area has been undertaken by the Middle Level Commissioners, under its present constitution since 1862, following the break up of the former Bedford Level Corporation.

The Middle Level river system consists of over 120 miles (190 kilometres) of watercourses most of which are statutory navigations and has a catchment of just over 170,000 acres (70,000 hectares).

Virtually all of the fen land within the Middle Level catchment lies below mean sea level. The Commissioners, together with the local internal drainage boards, therefore operate a highly complex flood protection and water level management system to balance the various water uses and requirements and to alleviate the risk of flooding of land and properties. The efficient operation of the system is vital to the safety and prosperity of over 100,000 people who live and work in the area and the 26,000 properties that depend on that system. But for the operations of the Commissioners and the local boards, much of the fen land would be under water for much of the year, accesses from higher ground would be cut-off and many of the present land uses, which are seemingly taken for granted, would be impossible.

## **History**

In the distant past, Great Britain was part of continental Europe with the rivers of eastern England being tributaries of the River Rhine, which flowed across a flat, marshy plain, which is now the southern North Sea. Following the end of the last Ice Age, the sea levels rose, severing Britain from Europe and flooding the area now occupied by the Fens. The fen area gradually became separated from the sea by extensive silt banks, which circled the fringes of the Wash. Within the fens, dense vegetation grew in the fresh water and this enabled the formation of peat deposits, which built up over some 6000 years,

until, at the time of the Norman Conquest, the peat fen had risen above the level of the sea, although several lakes or meres remained. A number of settlements were built, not only on the silt fringes of the Wash but also on a number of clay islands within the fens.

Although the Romans and Saxons had built a series of flood banks to protect the Marshland silts to the north, and a number of small local projects had been carried out during the Middle Ages to reclaim small areas of fen in the vicinity of some of the island towns and villages, no comprehensive schemes for the draining of the Fens were carried out until the 17<sup>th</sup> Century. During the period between 1630 and 1655, the Dutch engineer Sir Cornelius Vermuyden was employed by the Earl of Bedford and others to carry out comprehensive schemes to reclaim the Great Level of the Fens. The scheme included the cutting of the Old and New Bedford Rivers, the latter also known as the Hundred Foot River, to bypass the meandering course of the River Great Ouse and the creation of a huge washland (the Hundred Foot (or Ouse) Washes) from Earith to Salters Lode to store flood water when the rivers would otherwise be liable to overtop their banks. A similar washland was created to store the flood waters of the Nene and the Middle Level area was therefore protected from the flood waters of the Great Ouse and Nene by two huge barrier banks which stretched from Earith to Salters Lode and from Stanground to Guyhirn. Within the Middle Level, Vermuyden cut a number of new straight drainage channels such as the Sixteen Foot, Forty Foot and Twenty Foot drains, with the bulk of the Middle Level area draining into the Great Ouse at Salters Lode, via the Old Course of the River Nene, which continued to be the major waterway of the area. The remaining part of the Middle Level area drained via the Forty Foot Drain into the Old Bedford at Welches Dam.



Holme Fen Post

The improved drainage caused a rapid shrinkage of the peat fen and land levels dropped. By the early 18<sup>th</sup> Century, lowering land levels had required the Middle Level rivers to be embanked and many wind pumps to be built to lift the water from the field dykes into the rivers. By the early 19<sup>th</sup> Century, many of the wind engines had been replaced by steam to allow the water to be lifted through greater heights, to take account of the even greater peat shrinkage, resulting from the improved drainage.

By this time, it was clear that improvements to the watercourse systems would be a never ending process and in 1844, an Act of Parliament was passed to allow the cutting of the Middle Level Main Drain, a completely new channel which moved the main outfall sluice from Salters Lode to St. Germans, some 9 miles further down the Great Ouse, where low tide levels were 7 feet (2.5 metres) lower. At Mullicourt Aqueduct, the old drainage channel, which is still a statutory navigation, is carried over the Main Drain, providing a graphic illustration of the effects of land shrinkage. The cutting of the Main Drain also removed the need for discharge via the Forty Foot Drain.



Mullicourt Aqueduct

From the time of Vermuyden, the drainage of the Middle Level was run by the Bedford Level Corporation, until 1862, when an Act of Parliament set up the Middle Level Commissioners, who have continued to administer the flood defence and be responsible for the navigation of the Middle Level to the present day.

## **The St. Germans Outfall**

The original discharge at St. Germans was by way of a gravity sluice which was completed in 1848 and was situated across the Main Drain near its junction with the Great Ouse. The life of the original sluice was short-lived, however, as it collapsed under a huge surge tide on 6<sup>th</sup> October 1862 and flooded over 8,500 acres (3,400 hectares) of land in Marshland Fen. The sluice was temporarily replaced with a syphon dam and ultimately, in 1878, by a new sluice, the Hawkshaw Sluice, which discharged around the dam by means of a bypass channel. By the 1920's however, it was realised that gravity drainage alone would be insufficient to protect the ever shrinking fen from flooding and the first St. Germans Pumping Station was therefore built and opened in 1934. The original station contained 3 x 102" (2.6m) diameter pumps, which were capable of pumping 2,500 tonnes of water per minute against a worst tidal cycle. Various later improvements, including the addition of a fourth pump in 1951 and later installations of more powerful power units, then raised the station's maximum output to 4,348 tonnes/minute, when operating against a 3.0m static head by 1983. Following the major rainfall event of Easter 1998 a detailed study of St Germans concluded that replacement of the pumping station was required. Following consideration of various options, a new St. Germans pumping station was therefore built just downstream of the 1934 station with a discharge capacity of up to 100 cumecs, 7,830 tonnes per minute or, as a direct comparison with the old station 7,110 tonnes/minute against a 3m static head. Construction work began in December 2006 and the station came on line in April 2010, at a cost of £40 million. The new station protects 100,000 people and 26,000 properties and contains 6 concrete volute type pumps powered by electricity but each with a diesel powered generator, since, due to their size, only 3 pumps can be run off mains electricity at any one time.

## **Bevills Leam Pumping Station and the South West Area**

In 1983, the Commissioners completed a Major Improvement Scheme designed to continue to protect the south west area of the Middle Level. The south west area contains the lowest land levels and the deepest peat, which will continue to shrink into the future. This vulnerable area is also the first part of the fen to receive flood water from the bordering hills and is additionally furthest from St. Germans Pumping Station.

The scheme involved the construction of Bevills Leam Pumping Station to boost the flow into the remainder of the Middle Level River System and provide temporary controlled storage of highland flood water. A new Catchwater Drain was dug around the edge of the fen to collect the highland

water, cutting off the upland brooks and transport it more directly to Bevills Leam or, in times of peak flows, to Woodwalton Fen National Nature Reserve, through the closure of the Control Sluice where it could be stored and discharged into the river system at an acceptable controlled rate.

Bevills Leam Pumping Station has six pumping units together capable of discharging 1,080 tonnes/minute, approximately 15% of the capacity of St. Germans. The size of the station was able to be kept at this capacity because of the flood storage facility at Woodwalton Fen.

Woodwalton Fen National Nature Reserve is capable of storing 1,800,000 cubic metres of water. It is also a Ramsar site, SSSI and part of the Fenland Special Area of Conservation. In view of the increasing conservation importance of the site and the development of the Great Fen Project, which it is intended will include significant water storage facilities for the Commissioners, Natural England have proposed that, once these facilities are available, the Great Fen area is used as the first and primary area for water storage, with Woodwalton Fen then only being used as a back-up storage facility.



Control Sluice

## **The Middle Level Commissioners**

The Middle Level Commissioners are comprised of representatives from both the agricultural and non-agricultural sectors. Occupiers of agricultural property receive a rate demand direct from the Commissioners. The "rates" on non-agricultural properties, such as houses and factories, are paid through a special levy issued to the District Councils within the Commissioners' area. These Councils, Fenland D.C., Huntingdonshire D.C. and the Borough Council of King's Lynn & West Norfolk are, therefore able to appoint representatives as Commissioners in respect of and in proportion to the payment made in relation to these properties.

## **Internal Drainage Boards (IDBs)**

Within the Middle Level, there are also independent Internal Drainage Districts initially set up in the 18<sup>th</sup> Century and each responsible for the local drainage of their respective areas. Most have pumping stations and all discharge their run-off into the main Middle Level watercourses. Many of these I.D.B.'s are administered from the Middle Level Offices and their administrative and financial work is carried out by Middle Level staff. In addition, Middle Level staff also undertake engineering and planning liaison consultancy work for a large number of Boards.

## **The Middle Level Offices**

The whole of the Middle Level river system is administered from the Commissioners' offices in Whittlesey Road, March. The Clerk's Department provides the administrative and financial service while the Engineer's Department deals with all engineering aspects. The Operations Section is responsible for vital channel and structural maintenance as well as the operation of the two main pumping stations, the Mechanical and Electrical Section carries out the maintenance and renewal of over 80 pumping stations and the maintenance of the Commissioners' fleet of plant and vehicles, while the Technical Services Section provides an engineering consultancy for Internal Drainage Boards in the area as well as the design work necessary for Middle Level Operations.

## Navigation

The Middle Level, apart from its flood protection role, is also the fourth largest navigation authority by length of waterway in the United Kingdom and is responsible for approximately 100 miles (160 kilometres) of statutory navigation and the operation of six navigation locks. The Nene-Ouse Navigation Link forms part of the Middle Level Navigation. The Link is at present the only connection between the Great Ouse and the Main Canal Network. During a normal summer, over 1,000 passages of the Link-Route are made by pleasure craft. The Commissioners issue Navigation Notes, which provide navigation details for boat owners, who wish to use the system. These are available from the Middle Level Offices or from the Middle Level website at [www.middlelevel.gov.uk](http://www.middlelevel.gov.uk).



Ashline Lock

## **Angling**

The Middle Level rivers provide some of the best coarse fishing in the country and are regularly used for various National Championships. The Commissioners issue Notes providing further details of the fishing facilities.

## **Walking**

Many Middle Level waterways have public footpaths along the banks, which are often relics of old towpaths. The Hereward Way long distance footpath also crosses the area. Some public cycleways run across or alongside Middle Level property.

## **Conservation**

Within the Middle Level Catchment, there are three Major National Nature Reserves at Woodwalton Fen, Monks Wood and Holme Fen as well as a number of smaller sites of more local interest. The Commissioners have a statutory duty to further nature conservation in the performance of their functions and operate a specific conservation strategy, including the employment of a Conservation Officer which forms a basis for all their river maintenance operations. An Operations Manual and a Biodiversity Action Plan setting out best practices for river maintenance has been produced to guide those operations. There is also a close working relationship with Natural England and other conservation bodies, in particular through the Conservation Committee, which includes representatives of the Commissioners, the Environment Agency, Natural England and the local Wildlife Trusts.

## **Middle Level Waterways Users Committee**

The Middle Level Waterways Users Committee consists of representatives of the Commissioners and Users of the Middle Level system. It advises the Commissioners of the different requirements for water use in the Middle Level area and assists them in meeting such requirements so far as the Commissioners are able to do so.

## **Partnerships with Other Authorities**

The Commissioners are committed to working in Partnership with Lead Local Flood Authorities, District Councils, The Environment Agency, Anglian Water, Natural England and others, in various initiatives, to enhance both the local environment and recreational facilities. They are also represented on a variety of organisations and associated committees nationwide. The Flood and Water Management Act 2010 legally requires partnership working where appropriate between such bodies.



**Salter's Lode Lock**

## **Contact Details**

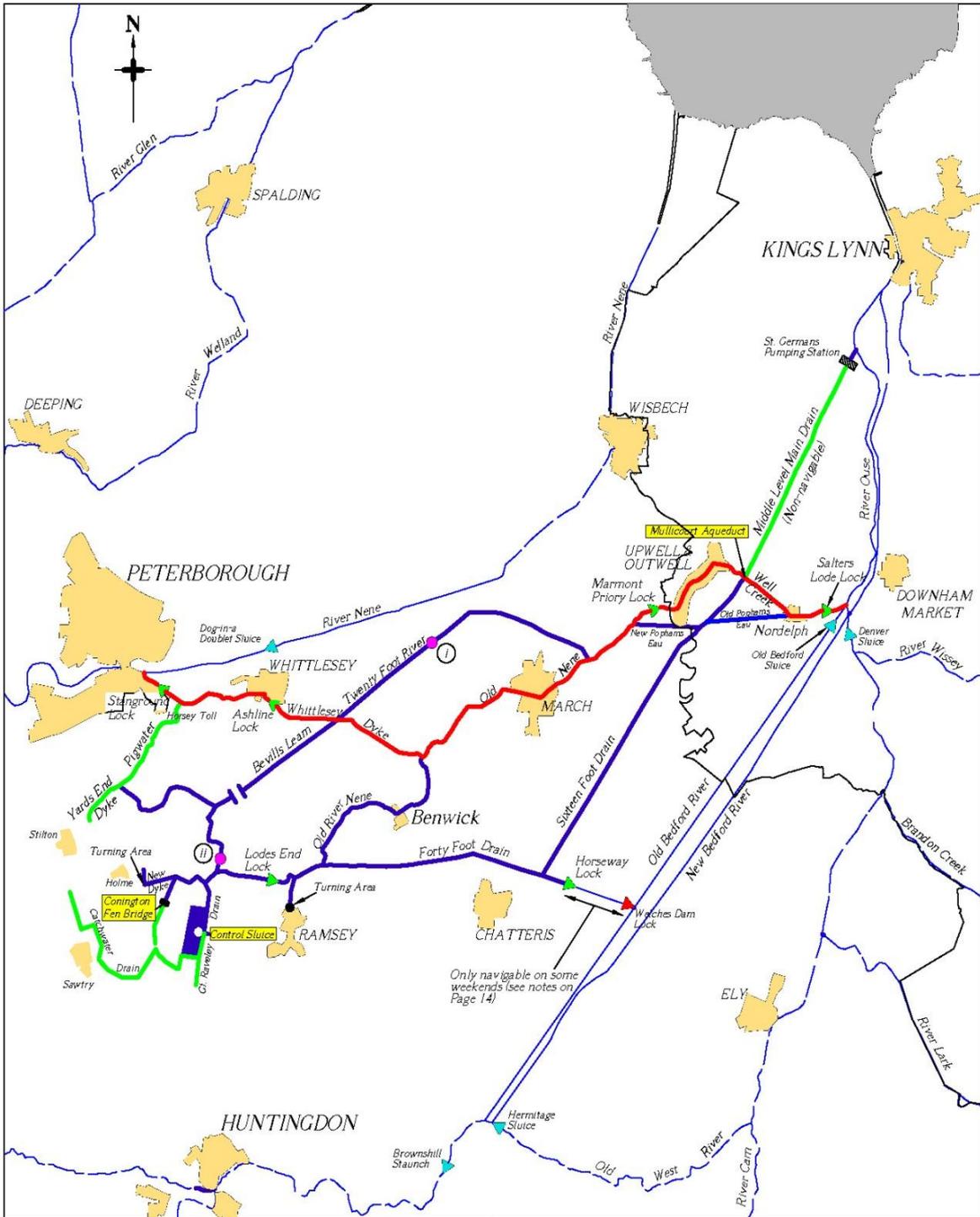
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Stanground Lock



| KEY  |  |
|--|--|
| MIDDLE LEVEL LINK ROUTE (Navigable)                    |  |
| OTHER NAVIGABLE MIDDLE LEVEL WATERCOURSES (See note 7) |  |
| M.L. WATERCOURSES (Non-Navigable)                      |  |
| RIVERS OUTSIDE M.L.                                    |  |
| CAMBS/NORFOLK COUNTY BOUNDARY                          |  |
| LOW BRIDGES (Ref No.)                                  |  |
| M.L. LOCKS   |  |
| OTHER LOCKS  |  |
| SLUICES  |  |

**MIDDLE LEVEL COMMISSIONERS**

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