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# Canvey Island Flood Defences Consultation

January 2003



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The Environment Agency is the leading public body protecting and improving the environment in England and Wales.

It's our job to make sure that air, land and water are looked after by everyone in today's society, so that tomorrow's generations inherit a cleaner, healthier world.

Our work includes tackling flooding and pollution incidents, reducing industry's impacts on the environment, cleaning up rivers, coastal waters and contaminated land, and improving wildlife habitats.

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# Introduction

Canvey Island is a mainly urban area on the Essex side of the Thames Estuary. The island is a low lying area of reclaimed tidal mudflats now protected from tidal flooding by flood embankments and sea walls. A map of the study area is shown below.

The Environment Agency is conducting a study to determine the current and future requirements of the island's main river system to ensure an adequate level of protection from flooding for the people of the area.



Canvey Island. Environment Agency pumping station locations are circled

# Purpose of this consultation document

We are seeking your views on probable improvements to the flood management system on Canvey Island.

It is hoped that by consulting stakeholders at this stage in the project, potential adverse environmental impacts of future works on Canvey Island can be identified and either mitigated or avoided. This is also an opportunity to identify potential positive impacts or enhancements that might be included in the project.

Stakeholders can assist this process by making the Environment Agency aware of any environmental issues you see as pertinent, giving your views on the possible options outlined and by identifying and providing relevant background information.

# The existing drainage network

The surface water drainage system on Canvey Island is made up of an interconnecting system of sewers, culverts, open channels and lakes.

Pumping stations are used to release water from the island into the Thames Estuary. The island drainage is divided into seven districts each served by a single or group of pumping stations.

The Environment Agency is responsible for the main arterial drainage of the island. This is fed by a network of smaller drains and sewers that is the responsibility of Anglian Water.



Open watercourses on Canvey Island are typically of this design

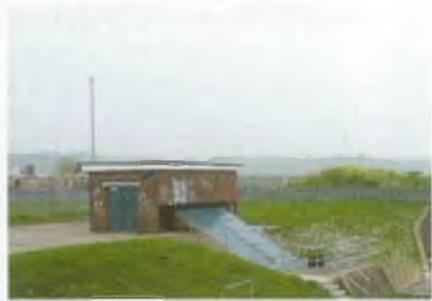
Development of the network has been piece-meal following major work carried out in the 1960's. Continuing urban growth on the island has altered surface water drainage, leading to quicker and higher flood events. There are widely reported incidents of flooding across the island.

It is the operation of the Environment Agency drainage system that is the subject of this study. Investigations have identified the following problems with the system:

- Many of the pumping stations are at or beyond their expected working lives
- Hydraulic modelling indicates that parts of the system have insufficient capacity
- Pump stations and pump arrangements do not conform to current health and safety requirements



St Anne's pumping station on the sea-front at Eastern Esplanade



Hilton pumping station discharges water into Tewkes Creek

There are twelve Environment Agency owned and operated pumping stations on Canvey Island.

The Government encourages operating bodies such as the Environment Agency to consider flood defence in an integrated and sustainable way by looking at the entire system rather than looking at individual districts.

# Environmental baseline

Benfleet Creek is within the Benfleet and Southend Marshes Special Protected Area (SPA) immediately north-east of Canvey Island. There are no nationally or internationally designated sites on the island.

The SPA is designated (under the EU Habitats Directive), as it supports more than 20,000 birds during the winter months, including a number of migratory species of national and international importance.

The Thames Estuary SPA, and Essex Coast candidate Special Area of Conservation (cSAC; designated under the EU Habitats Directive), are within 2km and 10km of Canvey Island, respectively.

Land use is predominantly pasture/meadow/amenity grassland and urban and semi urban/rural development. Other land types present are with saltmarsh around the coast and some marsh/rough grass. There is a large petrochemical storage facility at the western end of the island.

The north east of the island lies within the Essex Coast Environmentally Sensitive Area (ESA) which is intended to promote traditional grazing land use for conservation benefits.



Ringed Plover can be found at Benfleet Marsh during their migration

Recreational facilities include several marinas on the south side of the island, water skiing on the estuary to the west and windsurfing off the south of the island. There are no designated bathing waters or designated freshwater fisheries and no known abstractions or trade or domestic discharges. There have been a number of oil related pollution incidents on the island.

Dutch Cottage, a 'Dutch' style house built in the 17th century by drainage engineers, is a Grade II listed building. The cottage is adjacent to Dutch Village pumping station.



Dutch Cottage, a 17th century 'Dutch' style house (Grade II listed building)

# General work options

There are three general works options to pumping stations that are being investigated within this study: Do Nothing, Maintenance and Improvement.

There are three general types of pumping station on Canvey Island, small low flow stations, larger capacity screw stations and vertical spindle pumps. The option of 'Do Nothing' has been discounted as the existing system is required to protect life and property on Canvey Island. Remaining work options considered in the project are:

- maintenance of the existing pumping station
- improvement works at pumping station

The need for improvement works will be considered on a station by station basis. Condition surveys have identified the following problems at various pumping stations:

- pumps and electrical control systems are approaching or beyond their useful life
- pump station designs do not comply with current health and safety requirements
- built structures are in need of refurbishment
- there is a need within the system for additional permanent standby power generation



Rainbow pumping station, a typical low flow station

Hydraulic modelling of the existing system has indicated that the capacity of main river system is sufficient to achieve a 1% risk of flooding any one year (equivalent to once in 100 years on average). However, the capacity of some of the larger pumping stations is not sufficient to fulfil their role within the system. At these sites options being considered to address this are:

- increase pump capacity within existing stations, using existing chambers and outfall pipes, if technically possible
- increase pump capacity within existing stations, using new chambers and outfall pipes, if existing structures are not adequate
- construct new pumping station

Finally, there are particular operational problems at Croppenburg pumping station. Consequently improvement options for this station are the following:

- rebuild pumping station at the existing site
- rebuild pumping station at a new site, nearer to the sea-wall



Site works at Croppenburg may involve moving the pumping station from its current location (the red arrow) to a location closer to the sea wall within Environment Agency owned land (approximately marked by the blue arrow)

In addition works at Croppenburg may require the relaying of the pipes leading to and from the pumping station.

# Who has been consulted about the study?

The following organisations have been contacted for their views on the project. We are also interested to hear from anyone else who may have an interest in the scheme.

## Statutory consultees

- Castle Point Borough Council
- Countryside Agency
- Department for Environment, Food and Rural Affairs
- Department for Transport, Local Government and the Regions
- English Heritage
- English Nature
- Essex County Council



Reedbeds at Thorney Creek

## Non-statutory consultees

- Anglian Water
- British Trust for Ornithology
- Campaign for the Protection of Rural England
- Canvey Island Forum
- East of England Development Agency
- Essex Wildlife Trust
- Royal Society for the Protection of Birds
- Rural Development Service
- Thames Estuary Partnership
- Thames Gateway South Essex Partnership

In addition to this consultation document Atkins Water (who are the engineering consultants working for the Environment Agency), have produced a technical appendix that sets out in more detail the options outlined above. It also includes a reply slip to allow your views and information to be included at this stage of the study.

# Consultation contact

If you have any queries or issues you wish to discuss, please contact:

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