

RIVER DARENT CATCHMENT MANAGEMENT PLAN ACTION PLAN



NRA

*National Rivers Authority
Southern Region*

MISSION STATEMENT

The NRA's mission is :

"We will protect and improve the water environment by the effective management of water resources and by substantial reductions in pollution. We will aim to provide effective defence for people and property against flooding from rivers and the sea. In discharging our duties we will operate openly and balance the interests of all who benefit from and use rivers, groundwaters, estuaries, and coastal waters. We will be businesslike, efficient and caring towards our employees".

Our Aims are to :

- * Achieve a continuing overall improvement in the quality of rivers, estuaries and coastal waters, through the control of pollution.
- * Manage water resources to achieve the right balance between the needs of the environment and those of the abstractors.
- * Provide effective defence for people and property against flooding from rivers and the sea.
- * Provide adequate arrangements for flood forecasting and warning.
- * Maintain, improve and develop fisheries.
- * Develop the amenity and recreation potential of inland and coastal waters and associated lands.
- * Conserve and enhance wildlife, landscape and archaeological features associated with inland and coastal waters of England and Wales.
- * Improve and maintain inland waters and their facilities for use by the public where the NRA is the navigation authority.
- * Ensure that dischargers pay the costs of the consequences of their discharges, and, as far as possible, to recover the costs of environment improvements from those who benefit.
- * Improve public understanding of the water environment and the NRA's work.
- * Improve efficiency in the exercise of the NRA's functions and to provide challenge and opportunity for employees and show concern for their welfare.

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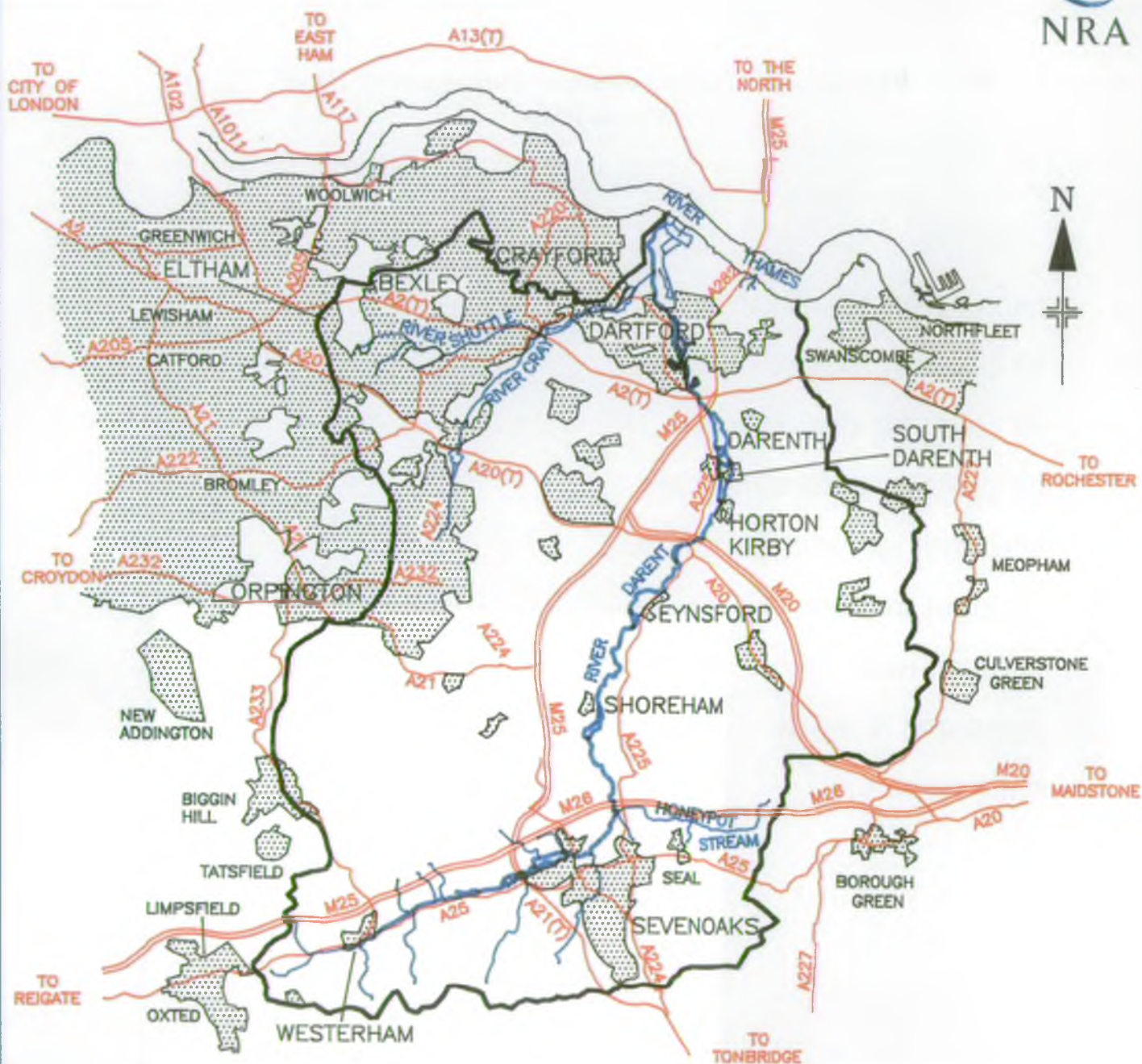
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ENVIRONMENT AGENCY



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Page 1



LEGEND

-  RIVER THAMES
-  RIVER DARENT TOPOGRAPHICAL CATCHMENT
-  RIVER DARENT
-  TOWNS
-  MAJOR ROADS

THE CATCHMENT

Darent and Cray Catchment Management Plan

A. THE NRA VISION FOR THE DARENT CATCHMENT

The National Rivers Authority has identified the River Darent as the most pressing case of over-abstraction in England and Wales, needing urgent action to restore the river to its former glory. The lower reaches have a history of drying at times of drought, largely as a result of groundwater abstractions for public water supply. Many of these predate the controlling legislation and operate under "Licences of Right" which were granted retrospectively and may authorise the abstraction of more water than the resource can provide at all times. Where it is necessary to amend such licences the holder is entitled to compensation.

The NRA is pledged to improve the river flow at times of stress and to restore the middle reaches of the Darent as a chalk stream supporting a flourishing trout fishery. The aim is to maintain the flow below Lullingstone at a level which is at least 50% of the lowest flow which would occur naturally in twenty years. This will be achieved by reducing abstraction, particularly in the upper catchment, and augmenting the middle reaches at times of drought by pumping water from the Chalk. The Authority will encourage sensitive management of the river channel, banks and adjacent stillwaters to conserve their wildlife interest and recreational value whilst preserving the flood capacity of the river.

The Authority recognises the need to safeguard public water supplies and is working with Thames Water Utilities to secure alternative sources for their customers, which will involve modifying the network of water mains. In achieving their objectives both the NRA and the Company will be making a considerable financial investment in the enhancement and conservation of this beautiful area.

NRA Kent Area Manager

B. THE CATCHMENT PLANNING PROCESS

Plan Production

The Water Act 1989 established the National Rivers Authority (NRA) as the "Guardian of the Water Environment", a non-departmental government organisation with responsibility for regulating and managing water resources, water quality in coastal and inland waters, flood defence, salmon and freshwater fisheries, water recreation and, in some areas, navigation. An additional duty laid on the NRA was to further conservation of the natural environment, seeking opportunities for enhancement wherever possible.

NRA Regions are defined by river catchment boundaries, comprising single catchments, as in the Thames Region, or groups of adjoining smaller catchments. With the exception of sea defence and coastal water pollution control, all the NRA's functions are managed within this catchment framework, the need to resolve conflicts arising from differing functional objectives makes it essential to integrate the NRA's planning in the same way.

Catchment Management Plans relate firstly to the Authority's own operations, including that of a statutory regulator controlling the actions of others. However, the Plans also offer an opportunity for input from the public to the development of NRA policy, and for the Authority itself to draw attention to its aspirations for the improvement of the water environment.

The Plans concentrate on topics where the Authority has a direct interest and are focused mainly on the river corridor, although some functions such as water resource management and pollution control inevitably extend over the whole catchment area. Whilst they lack the status of statutory planning documents, it is hoped that Catchment Plans will make a positive input to the Town and Country planning process.

Catchment Planning Consultation Reports are produced as a vehicle for wide public consultation about catchment issues. This Final Report has been prepared in the light of comment received.

Public Consultation

The NRA will be responsible for the implementation of this Catchment Management Plan in partnership with the organisations identified in the Action Programme. Progress will be monitored and reviewed annually to ensure that the Plan meets current needs, and there will normally be major revisions at five yearly intervals.

C. THE DARENT AND CRAY CATCHMENT

The Darent valley has been a focus for human settlement and activity for many centuries, with prehistoric earthworks, Roman villas at Lullingstone, Farningham and Sutton-at-Hone, and medieval castles at Lullingstone and Eynsford. The Cray and lower Darent catchments are highly urbanised and include suburbs of south-east London, whereas the middle and upper reaches of the Darent have a rural character.

The use of the River Darent for water power involved flow diversions which left very little "natural" stream between mill ponds, changing the nature of the river, and although there were once extensive water-meadows much of this land has been developed for housing or as gravel pits. Nevertheless, the rural Darent valley still provides pleasant surroundings for informal recreation and the flooded gravel pits are valued as nature reserves, fisheries, or as sites for water sports.

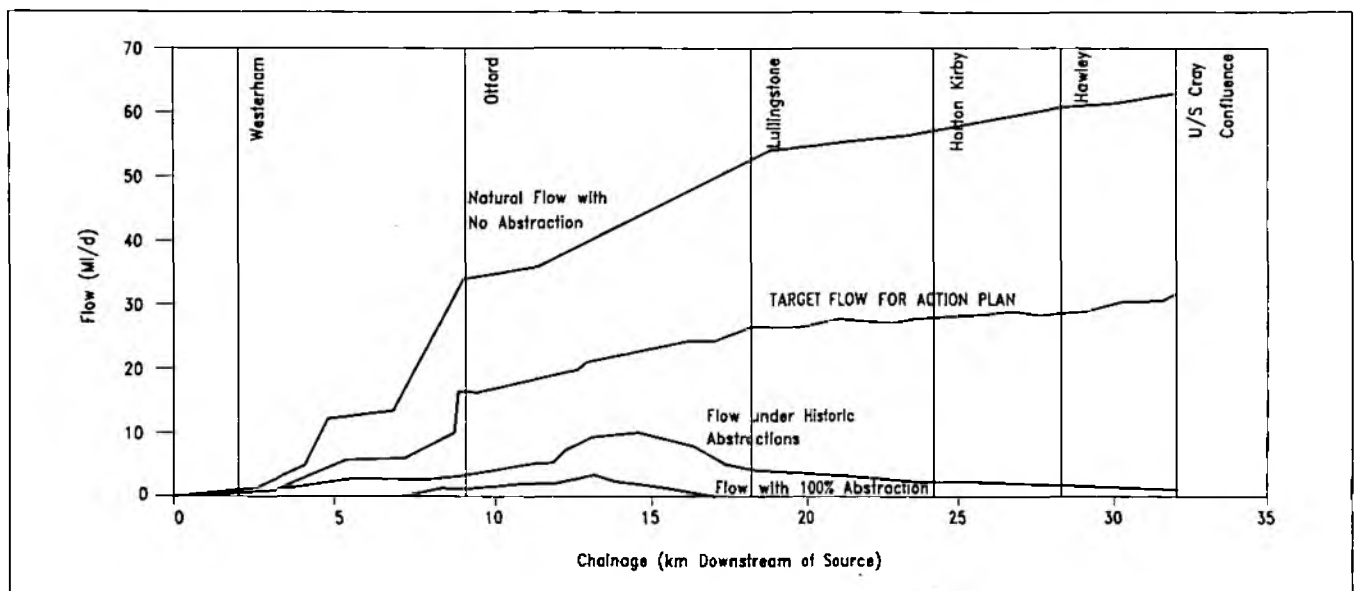
The greater part of the catchment is on the Chalk, where surplus rainfall soaks underground. As a consequence the Rivers Darent and Cray have few tributaries other than those which drain the clay soils east of Sevenoaks and around Bexley. The proximity of London has led to the catchment's groundwater being heavily exploited for public supply, to the extent that springs dry, river flows are reduced and may even fail at times of low rainfall (most recently in the prolonged drought of 1989-92). Whilst the problems of low flows have received most attention in recent years the catchment also has a history of flooding. Torrential rainfall in September 1968 caused extensive damage to roads, bridges and riverside property, but subsequent flood defence works have increased the river's capacity and reduced the risk. Tidal flooding from the Thames Estuary is controlled by the Dartford barrier, operated by the NRA.

Most of the urban wastewater generated in the Darent catchment is intercepted by a trunk sewer running from Westerham to Crossness, where it is treated and discharged to the Thames Estuary. A similar situation exists in the Cray valley. Whilst solving pollution problems, this export of effluent from the catchment represents a significant loss of water resources which could otherwise be recycled to boost river flows and abstracted for reuse. Reliance on the trunk sewer also introduces the risk of pollution from overflows of untreated sewage when it is blocked or its capacity is exceeded by storm runoff.

Darent and Cray Catchment Management Plan

D. THE DARENT RESOURCES ACTION PLAN

Following recognition of the Darent as a seriously over-abstracted river, the NRA undertook an extensive investigation into the problem of low flows. This coincided with the drought of 1989-92, when much of the river downstream of Farningham dried for prolonged periods, and resulted in an Action Plan agreed between the Authority and Thames Water Utilities Ltd, designed to maintain an environmentally acceptable flow in the River Darent whilst safeguarding drinking water supplies. The maintained flow will follow a target flow profile which is 50% of the lowest natural flow occurring once in twenty years.



Target Flow Profile

The Resources Action Plan has three principal aims:-

- 1) To secure defined target flows in the River Darent
- 2) To conserve the ecology of the River Darent
- 3) To maintain the security of public water supplies

Agreed Water Supply Objectives

- * To ensure that existing abstractions and future resource developments do not degrade the flow regime of the river.
- * Where possible, to define new license agreements to secure measures for the benefit of nature conservation in the catchment
- * To encourage the operation of seasonal resource management schemes to improve river flows during the summer.
- * To encourage abstractors and water users to adopt water saving measures, including demand management and leakage control to target levels.
- * To consider the adoption of a scheme of abstraction license charges which reflects environmental impact.
- * To promote the return of suitably treated effluent to the catchment.
- * To maintain and develop the hydrometric monitoring network.
- * To consider the effects of possible climate change in long term water resource planning.

Measures to meet these aims are listed in the MANAGEMENT PROPOSALS section of this report.

E. INTERACTION WITH DEVELOPMENT PLANS

As a statutory consultee for Local Authority Structure and Local Plans, and for individual development proposals, the NRA has the following objectives:-

- * To protect surface, groundwater and coastal waters from pollution arising from development.
- * To ensure that development does not result in over-exploitation of water resources.
- * To ensure that the risk of flooding is not significantly increased by development, and that proposed developments are not themselves at risk from flooding.
- * To minimise the adverse effects of development on the water environment, particularly with regard to fisheries, wildlife conservation, landscape and historic sites.
- * To maximise the potential environmental benefits which development may offer.

Details of NRA planning policies are given in the publication "Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans"

Darent and Cray Catchment Management Plan

F. CATCHMENT STATISTICS

E.1 GENERAL INFORMATION

Surface catchment area 40,096 Ha (400.96 km²)

Groundwater catchment area 37,322 Ha (373.33 km²) * estimated

Topography

Maximum Level 251 m AOD
Minimum Level 0 m AOD

Geology

Lower London Tertiaries 19%
Chalk 59%
Gault Clay 6%
Lower Greensand 16%

Estimated Catchment Population

Year	Population	Change per decade
1981	301,100	
1991	329,400	+8.5%
2001	354,40	+7.0%

Districts and Estimated Population (1991)

District	Persons per km ²	Ha in catchment	% area of catchment	Population in catchment
Kent County Council		29,000	72.4%	130,000
Dartford	1090	5,300	13.3%	57,800
Sevenoaks	300	22,800	56.8%	68,400
Tonbridge	420	900	2.3%	3,800
London		10,600	26.4%	279,700
Bexley	3560	3,200	7.9%	113,900
Bromley	1910	6,400	16.0%	122,200
Greenwich	4360	1,000	2.5%	43,600
Tandridge (Surrey County Council)	310	500	1.2%	1,600

Note: The population figures are approximate and portray overall trends rather than precise values.

Darent and Cray Catchment Management Plan

F.2 WATER RESOURCES

Resource Areas

	Resource Areas			
	Darent Greensand	Darent Chalk	River Cray	Total
Catchment Area (Ha)				
Surface	9822	17,354	13,242	40,096
Groundwater (approximate)				37,332
The Demand for Water (Ml/d)				
Public Water Supply				
Surface Water	0	0	0	0
Groundwater	48	104	79	231
Industrial/Agricultural	1	25	16	42
TOTAL DEMAND	49	129	95	273

Rainfall (mm)

	Mean Year	1:10 yr Drought
Mean Annual Total	655	515
Effective Rainfall	191	50

Abstraction

Licensed Abstraction (Ml/d)	101,086
Actual Abstraction (1989) (Ml/d)	70,834
Percentage from groundwater	96%
Percentage in High/Med Loss category	99%

River Flow (cumecs)

Mean Flow	(Q50)	0.46
95 percentile Flow	(Q95)	0.02

Darent and Cray Catchment Management Plan

Water Supply Companies serving the catchment

	Area (km ²)	% Catchment
East Surrey Plc	11	3%
Mid Kent	60	15%
SE Water (W Kent)	50	13%
SWS (Medway)	18	4%
Thames Water	262	65%

F.3 WATER QUALITY

River designated under EC Freshwater Fish Directive (km)

Salmonid designation	-
Cyprinid designation	51.64

Length of River in each Quality Class (km)

Class	Description	Target	Achieved 1990
1	Excellent	0	13.4
2	Good	38.2	45.7
3	Fair	20.9	0
4	Fair	0	0
5	Poor	0	0

F.4 FLOOD DEFENCE

Length of Main River (km). 78.7 (includes tidal lengths)

Length of Coastline (km)

Schedule 4	0
Main Tidal Waters	9.2
Sea Defences (NRA)	0
Sea Defences (LA)	0
Tidal Banks (NRA)	13.2

Internal Drainage Districts (Ha)

West Gravesend Commissioned Area 6 km² approx



F.5 CONSERVATION

Number of Designated Sites in the Catchment

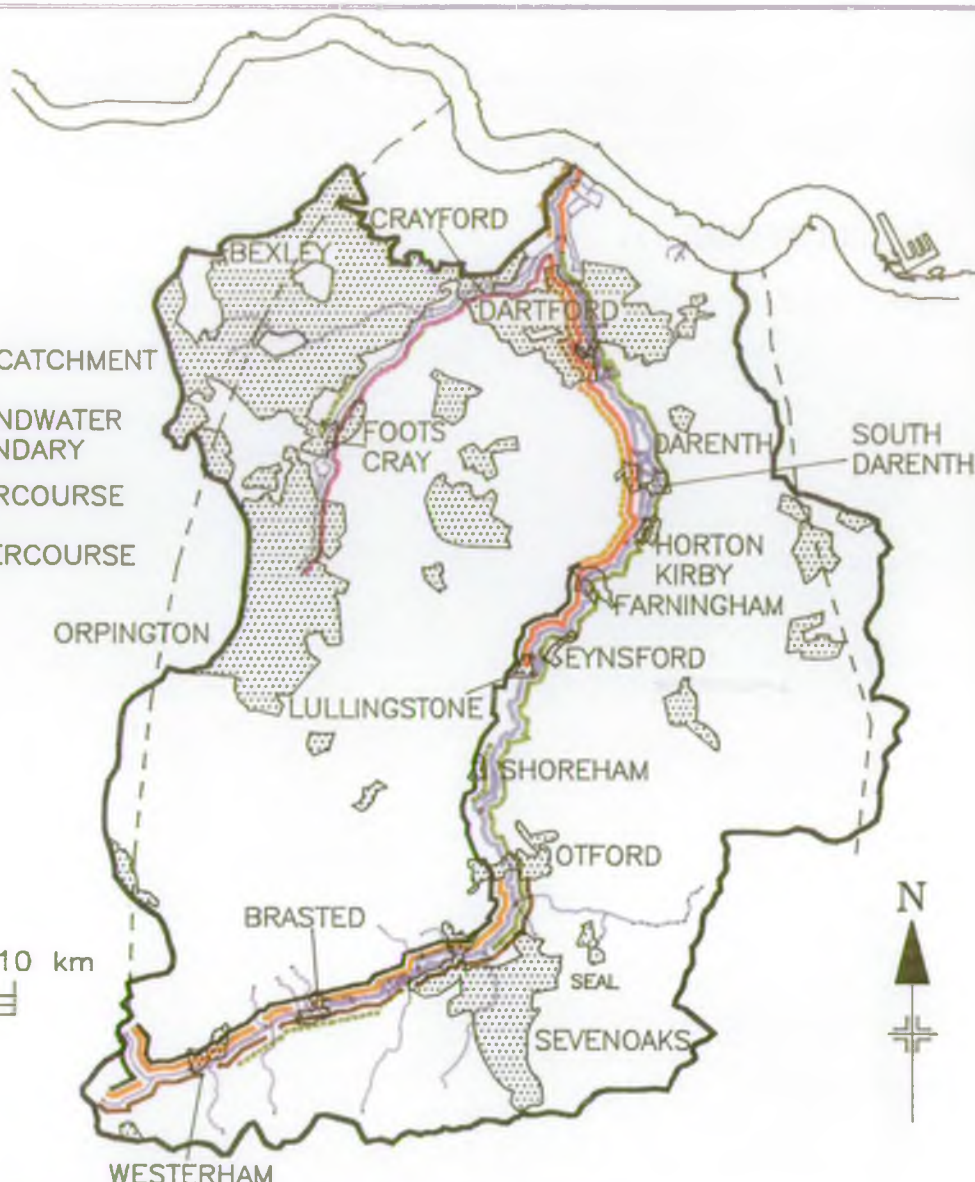
Type	Total	Water Dependent
Ramsar Sites	0	0
National Nature Reserves	0	0
Sites of Special Scientific Interest	19	18



LEGEND

-  RIVER THAMES
-  RIVER DARENT
-  TOPOGRAPHICAL CATCHMENT
-  ESTIMATED GROUNDWATER CATCHMENT BOUNDARY
-  PERENNIAL WATERCOURSE
-  EPHEMERAL WATERCOURSE
-  TOWNS

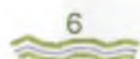
0 1 2 3 4 5 10 km



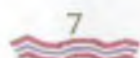
1 FLOWS BELOW LULLINGSTONE SIGNIFICANTLY REDUCED BY ABSTRACTIONS FROM CHALK FOR EXPORT FROM CATCHMENT



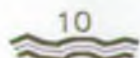
2 FLOW REDUCTIONS IN REACHES ABOVE OTFORD DUE TO ABSTRACTION FROM LOWER GREENSAND



6 TRUNK FOUL SEWER FROM SEVENOAKS TO DARTFORD OVERFLOWS DURING HEAVY RAINFALL



7 FLOWS IN RIVER CRAY REDUCED BY ABSTRACTION FROM CHALK. RECENT REDUCTION IN DEMAND AND RECOVERING GROUNDWATER LEVELS HAS LED TO OCCASIONAL LOCALISED FLOODING.



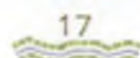
10 RIVER ABOVE FARNINGHAM DESIGNATED AS CYPRINID FISHERY. WATER QUALITY GOOD ENOUGH TO SUPPORT TROUT AND SOME REACHES COULD BE RE-DESIGNATED AS SALMONID WATER WHEN TARGET FLOW REGIME ACHIEVED



11 UPSTREAM OF OTFORD THE NATURAL BANKSIDE VEGETATION IS SPARSE



12 DOWNSTREAM OF FARNINGHAM AQUATIC VEGETATION IS POOR



17 ADEQUACY OF FLOOD PROTECTION QUESTIONABLE ALONG WESTERHAM TO BRASTED REACH, SHOREHAM AND FOOT'S CRAY

CATCHMENT ISSUES

Darent and Cray Catchment Management Plan

G. CATCHMENT ISSUES

1. Flows in the Darent below Lullingstone are significantly reduced by abstractions from the Chalk for export from the catchment. Long reaches of the river dried for several months in the years 1989-92.
2. Flow reductions in the reaches above Otford are attributable to abstraction from the Lower Greensand in the upper catchment.
3. The NRA is committed to improve low flows in the Darent to restore the river as a chalk stream habitat. The Target Flow Profile corresponds with a low flow regime equivalent to half the 1 in 20 year natural low flow. To achieve this will require reduced abstraction from key sources and artificial river augmentation.
4. Solutions to the low flow problem must recognise that water undertakings have a duty to maintain the continuity and security of public supply and must also satisfy the benefit/cost criteria set for public expenditure.
5. Most of the liquid waste generated within the catchment is discharged direct to the Thames Estuary, reducing the potential for recovery of water for reuse within the catchment.
6. The trunk foul sewer from Sevenoaks to Dartford overflows during periods of heavy rainfall and may pollute watercourses.
7. Flows in the River Cray are reduced by abstraction from the Chalk, but reduced demand in recent years appears to have resulted in recovering groundwater levels leading to occasional localised flooding.
8. The chalk aquifer is vulnerable to pollution from spillages in urban and industrial areas.
9. Groundwater nitrate concentrations in the chalk aquifer are within the MAC of the EC Drinking Water Directive, but exceed the guideline limits.
10. The river above Farningham is designated as a Cyprinid fishery under the EC Freshwater Fisheries Directive, but water quality is good enough to support trout and some reaches could be designated as Salmonid water.
11. Upstream of Otford the natural bankside vegetation is sparse and in some reaches the banks have been trampled excessively by livestock. This is particularly noticeable in the area of the junction with the Honeypot Stream.
12. Downstream of Farningham aquatic vegetation is poor although the river has many natural features. For much of its length the river is bordered by cultivated or urban land. A buffer strip of natural vegetation would conserve wetland features, attenuate siltation and run-off from surrounding land, and form an important feature of the landscape.
13. Flood defence maintenance work, the management of riparian vegetation and excessive trampling of the river banks by cattle damage the nature conservation interest of some reaches.
14. Intensive management of vegetation on river banks can detract from their conservation and amenity value.

Darent and Cray Catchment Management Plan

15. Between Otford and Lullingstone low weirs have been built to retain summer water levels for angling. Such structures used to be more widespread but were removed for land drainage reasons, although they enhance the conservation value of the river. Consideration should be given to their wider use.
16. The timely operation of privately owned sluices is essential to control flooding when flows are high.
17. Following extensive flood defence works most river reaches meet their flood protection targets provided sluices are operated properly. Only the Westerham to Brasted reach (R.Darent), Shoreham (R.Darent), and Fooks Cray (R.Cray) are questionable in this respect.
18. Low flows and lack of suitable habitat prevent the establishment of a sustainable population of brown trout in the River Darent.
19. There is potential conflict between the objectives of fishery management and conservation.
20. There is a need for close control of development in flood risk areas such as the river flood plain and the marshes bordering the Thames Estuary.
21. (New Issue). The native crayfish population is under threat from disease and introduced species

Darent and Cray Catchment Management Plan

H. MANAGEMENT PROPOSALS

ISSUES 1, 2, 3, 4 Artificially induced low flows in the River Darent. River dries in places at times of drought	
MANAGEMENT OPTIONS	
*	<p>Implement the River Darent Resource Action Plan at an estimated cost of £12m (subject to the agreement of the Department of the Environment)</p> <p>Adopt potable water distribution systems to allow the replacement of Darent water with water from other sources. (TWU)</p> <p>Reduce groundwater abstraction from the catchment. (TWU)</p> <p>Vary selected abstraction licences to reduce the demand on Chalk water in the Lullingstone-Eynsford area. (NRA)</p> <p>When necessary to achieve the agreed Target Flow Profile, augment river flows with water pumped from bankside wells. (NRA)</p> <p>Investigate the need for further flow augmentation using surplus groundwater from the Northfleet area (currently discharged to the Thames Estuary). (NRA)</p> <p>Introduce a legally binding Water Resources Management Scheme:</p> <ol style="list-style-type: none">for the conjunctive use by TWU of River Thames surface water and Darent catchment groundwater to supply south-east London. (TWU)for river augmentation by NRA to maintain the agreed Target Flow Profile. (NRA)to monitor the adequacy of the agreed Target Flow Profile. (NRA)to introduce demand management measures with agreed performance targets for water supply in the area served by the Darent catchment and to adjust demand forecasts to reflect the results of this work. (TWU)

Darent and Cray Catchment Management Plan

ISSUES 5 & 6

Treated effluent is discharged to the Thames Estuary, depleting the resources of the catchment. Occasional overflows from the trunk foul sewer are a threat to water quality in the River Darent

MANAGEMENT OPTIONS

- * Investigate the frequency and severity of the overflow problems and implement engineering solutions. (TWU)
- * In the longer term, investigate schemes for the treatment of urban wastes and reuse of water within the catchment. (TWU, NRA)

ISSUE 7

Following a temporary reduction in abstraction, groundwater levels appear to have risen in the Cray sub-catchment and may contribute to localised flooding problems

MANAGEMENT OPTIONS

- * Monitor the abstraction regime and its effects on local groundwater levels. (TWU, NRA)

ISSUE 8

The chalk aquifer in urban areas is vulnerable to pollution

MANAGEMENT OPTIONS

- * Apply the NRA Groundwater Protection Policy. (NRA)
- * Ensure that every care is taken with transport, storage and handling of oils, solvents and toxic substances. (Industry, Local Authorities, NRA)
- * Educate operators and the public to be aware of the risks. (Industry, Local Authorities, NRA)
- * Ensure that road and railway drainage systems incorporate measures to minimise pollution of watercourses and groundwater. (Dept. of Transport, County Council, Railway undertakings, NRA)

ISSUE 9

Whilst remaining below the Minimum Acceptable Concentration, the nitrate content of parts of the chalk aquifer exceeds the guideline limits of the EC Drinking Water Directive

MANAGEMENT OPTIONS

- * Continue to monitor the situation. (NRA, TWU)
- * If necessary, investigate alternative strategies for the treatment of potable water. (TWU)

ISSUE 10

Good river water quality provides an opportunity to designate some reaches as Salmonid River under the EC Freshwater Fisheries Directive

MANAGEMENT OPTIONS

- * Review designations under the Directive. (NRA)

ISSUES 11, 12, 13, 14

Adverse impact on amenity and river ecology from maintenance work, intensive management of riparian vegetation and excessive trampling of river banks by cattle

MANAGEMENT OPTIONS

- * Continue and enhance sensitive maintenance techniques which have minimum environmental impact whilst achieving flood defence targets. (NRA)
- * Restrict access to the river bank by cattle in sensitive areas. (Farmers)
- * Encourage the management of bankside land as a buffer strip which has landscape value, provides a corridor for wildlife and helps to attenuate the effects of run-off from the land. (NRA, Landowners, CC, EN, MAFF, NWKPC)
- * Encourage the application of land-use grant schemes to protect and enhance wetland habitats. (NRA, Landowners, CC, EN, MAFF, NWKPC)

Darent and Cray Catchment Management Plan

ISSUE 15 River too shallow at times of low flow
MANAGEMENT OPTIONS
<ul style="list-style-type: none">* Provide small weirs to improve the amenity and conservation value of the river without increasing flood risks. (NRA)
ISSUE 16 Need for timely operation of privately owned sluices to control flooding
MANAGEMENT OPTIONS
<ul style="list-style-type: none">* Maintain good liaison between riparian owners and NRA. (NRA, Owners, Local Authorities)
ISSUE 17 Flood defence standards not met in some river reaches
MANAGEMENT OPTIONS
<ul style="list-style-type: none">* Investigate improvement schemes which meet benefit/cost criteria. (NRA)
ISSUE 18 Action is needed to restore a sustainable population of brown trout in the River Darent
MANAGEMENT OPTIONS
<ul style="list-style-type: none">* Restore minimum river flows to conform with the Target Flow Profile. (NRA, TWU)* Manage in river gravel beds to provide suitable spawning sites for brown trout. (NRA, Anglers)* Ensure that river water quality is maintained. (NRA)* Stock with suitable strains of brown trout to form the basis of a naturalised population. (NRA, Angling Clubs, Owners)
ISSUE 19 There is a potential conflict between the objective of fishery management and conservation
MANAGEMENT OPTIONS
<ul style="list-style-type: none">* Ensure that conservation objectives are taken into account in the management of fisheries and fish stocks. (Angling Clubs, NRA)

Darent and Cray Catchment Management Plan

ISSUE 20

Development needs to be controlled in flood risk areas

MANAGEMENT OPTIONS

- * Promote good liaison between the NRA and Local Authorities to ensure that unsuitable development does not occur. **(NRA, Local Authorities)**

ISSUE 21

Native crayfish under threat

MANAGEMENT OPTIONS

- * Promote the Crayfish Action Plan agreed with English Nature. **(NRA, EN, MAFF, Landowners)**


I. ACTION PROGRAMME

Management Task	95 96 97 98 99 Future	Action by	Estd £k
<u>Issues 1, 2, 3, 4 Low flows and River Darent dries in droughts</u> Adapt public water supply network to allow the Darent demand area to be served by other sources. Reduce abstraction from the upper catchment. Operational investigations into impact of remedial measures. Vary selected abstraction licenses in the mid-catchment area. Install bankside river augmentation wells in mid-catchment. Investigate river augmentation using groundwater from Northfleet area. Introduce a legally binding Water Resource Management Scheme.	Under negotiation ■ Phased reduction ■ Under negotiation ■ To be agreed by DoE Under negotiation	TWU TWU (in neg with NRA) NRA NRA,TWU NRA NRA NRA,TWU	600 in total for TWU 400 750 5000
<u>Issues 5 & 6. Discharge of sewage effluent to Thames is a lost water resource</u> Investigate the treatment of urban wastes for re-use within the catchment. Take action to solve the storm sewage overflow problem.	■ ■ ■	TWU NRA,TWU	
<u>Issue 7. Local flooding from groundwater in the Cray Valley</u> Monitor abstraction regime and groundwater levels.	Continuing activity	NRA	
<u>Issue 8. Chalk aquifer liable to pollution</u> Apply NRA Groundwater Protection Policy. Ensure that care is taken with oils, solvents and industrial chemicals. Ensure that users of chemicals are aware of the risk. Ensure that road drainage systems incorporate pollution prevention measures.	Continuing activity Continuing activity Continuing activity Continuing activity	NRA NRA,Industry,LA NRA,Industry,Users NRA,HA,DoT	

ACTION PROGRAMME (cont'd).

Management Task	95 96 97 98 99 Future	Action by	Est'd £k
<u>Issue 9. Groundwater Nitrate levels exceed EC guideline concentration</u> Investigate alternative treatment strategies for potable water. Consider designation of Nitrate Sensitive Area.		TWU NRA,DoE, MAFF	
<u>Issue 10. Potential to designate more waters under EC Freshwater Fisheries Directive</u> Review EC designations once a brown trout population has been re-established.	When conditions suitable	NRA	
<u>Issues 11, 12, 13, 14. Conservation of riverside and wetland ecology</u> Take care to use sensitive river maintenance techniques. Manage bankside land as a buffer strip for wildlife conservation, etc. Encourage application of land-use grant schemes to enhance wetland conservation. Restrict access by cattle to river banks to control excessive trampling.	Continuing activity Continuing activity Continuing activity Continuing activity	NRA,Riparian owners NRA,Owners,EN,CC,MAFF NRA,EN,NWKCP Farmers,NWKCP	
<u>Issue 15. River too shallow at times of low flow</u> Provide small weirs to retain water at times of low flow.	Continuing activity	NRA,Owners,LA	
<u>Issue 16. Timely operation of private sluices</u> Maintain good liaison between NRA and riparian interests.	Continuing activity	NRA,Owners	

ACTION PROGRAMME (cont'd).

Management Task	95 96 97 98 99 Future	Action by	Estd £k
<u>Issue 17. Flood defence standards not met in some river reaches</u> Investigate improvement schemes which meet benefit/cost criteria.		NRA	5
<u>Issue 18. Restore viable brown trout population</u> Manage flow to meet Target Flow Profile. Manage river gravels to provide spawning sites for trout. Ensure that water quality is maintained. Stock with suitable strains of trout.	Under negotiation Continuing activity Continuing activity Continuing activity	NRA,TWU NRA,Owners NRA NRA,Owners	
<u>Issue 19. Potential conflict between Fisheries and Conservation objectives</u> Ensure that fisheries operations are managed in a sensitive way.	Continuing activity	NRA,Owners,Anglers	
<u>Issue 20. Development may pose a flood risk</u> Promote good liaison between NRA and Planners to ensure that unsuitable development does not occur.	Continuing activity	NRA,Local Authorities	
<u>Issue 21. Native crayfish under threat</u> Promote the Crayfish Action Plan agreed with English Nature.	Continuing activity	EN,NRA,MAFF,Landowners	

Darent and Cray Catchment Management Plan

Abbreviations

The following are used in the Management Proposals and Action Programme sections of this report and refer to those bodies that are relevant to the particular proposals.

CC	Countryside Commission
DoE	Department of Environment
DoT	Department of Transport
EN	English Nature
HA	Highways Authority
LA	Local Authority
MAFF	Ministry of Agriculture, Fisheries and Food
NRA	National Rivers Authority
NWKCP	North West Kent Countryside Project
TWU	Thames Water Utilities

Darent and Cray Catchment Management Plan

NOTES

TELEPHONE THE EMERGENCY HOTLINE TO REPORT ALL ENVIRONMENTAL INCIDENTS, SUCH AS POLLUTION, POACHING AND FLOODING, OR ANY SIGNS OF DAMAGE OR DANGER TO OUR RIVERS, LAKES AND COASTAL WATERS. YOUR PROMPT ACTION WILL HELP THE NRA TO PROTECT WATER, WILDLIFE, PEOPLE AND PROPERTY.

NRA EMERGENCY HOTLINE

0800 80 70 60

24 HOUR EMERGENCY TELEPHONE LINE



NRA

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Southern Region*

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