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MEMORANDUM

To: W/B/H CMP NRA Working Party Members.
From: Tim Knight, Catchment Planning Officer, Sunbury.
Date: 12 May 1995.

DRAFT W/B/H CMP ACTION PLAN.

The program for approval of the enclosed draft is as follows:

- CMP Committee Members comments received on 11/05/95 (enclosed)
- Committee Member comments + first draft circulated to AMT and NRA Working Party 12/05/95
- Catchment Planning Team to receive AMTs initial comments on 16/05/95 which will be circulated immediately to NRA Working Party Members.
- NRA Working Party members to return annotated draft Action Plans to Catchment Planning Team by the 26/05/95 to ensure final amendments can be made before submission to AMT by 02/06/95 (for approval at AMT business meeting on the 13/06/95).
- Submit Action Plan to RMB on 16/06/95 (for final approval at RMB Meeting 26/06/95).
- Print 1000 copies and formal launch at suitable venue in catchment mid July.

I shall be contacting members over the following two weeks to finalise the fine details of the Activity Plan (Section 6) in terms of costs, timing and prioritisation of activities from the NRAs standpoint. Bearing in mind the Committee Members recommendations, I would be grateful if individuals would agree to act as named contacts on appropriate activities (example extract from Middle Lee Activity Plan enclosed for your information).

Thank you once again for your commitment to this plan and I look forward to receiving your comments.

T.J. Knight

MEMORANDUM

To: AMT
From: Tim Knight
Date: 11 May 1995

Feedback from Committee Members Working Party on the W/B/H CMP Draft Action Plan - 11/05/95.

I would be grateful for your views at the AMT meeting on the 16th May on the following recommendations made by the committee members when considering your response to the Draft Action Plan:

- **(2. Introduction)** Water Quality Objective section, whilst fully in accordance with National Guidelines, far too complex. Recommend transfer to appendix and replacement in main text with a more user friendly version. Also need to explain in text why some RQOs are lower than current RE achievement !
- **(3. Review)** Replacement of 'most contentious issues'(misleading) with issues which received most comment from consultees in the form of a bar/pie chart.
- **(5. Sustainable Development)** Strong opposition to inclusion of reference to appendix C regarding sustainability criteria. Reason: new methodology untested and not approved nationally by NRA !
- **(6. Activity Plan).** Third para. of intro. text should be expanded to include indication of real annual NRA costs of managing the catchment. The Activity Plan costs are marginal and the public has the right to know what portion of the £70M annual allocation to NRA TR is spent on this catchment.
- **(6. Activity Plan tables).** Need to prioritise each activity into High/ Medium /Low Need to assign individual NRA staff to each NRA-led activity. Reason: to aid progress chasing for Annual CMP Review and as a contact for internal and external consultees.
- **(General).** Plea to repeat the easy-to-read style of Consultation Report in the Action Plan; need to include a position statement on NRA's role in the protection and enhancement of ponds and lakes, given commitment to objective 4, which is unclear at present from an external viewpoint.

Thank you.

EXTRACT FROM MIDDLE LEE CMP ACTIVITY PLAN

TO SHOW NRA CONTACTS FOR INDIVIDUAL ACTIVITIES

| Issue No. | Objective | Action | Lead. | Partner | Total Cost (£k) | 1995/6 | 1996/7 | 1997/8 | 1998/9 | 1999/on |
|-------------------------|---|---|---------|--------------|-----------------|---------------------|--------|--------|--------|---------|
| 16. | minimise the threat of pollution from towns and industry in the catchment | Continue to give advice on new development through the land use planning system | NRA | LAs | <25 | —————→ | | | | |
| | | Carry out a pollution prevention campaign at Stansted Airport | NRA | BAA Industry | <10 | ● | | | | |
| | | Carry out a pollution prevention campaign at schools in Essex | NRA | ECC | <10 | ● | | | | |
| Contact: Julian Arikans | | | | | | | | | | |
| 17. | To investigate the contribution to eutrophication from certain sewage treatment works | Assess and report on the eutrophic impact of Bishop's Stortford STW | NRA | TWUL | n.a. | ● | ● | ● | ● | |
| | | Assess and report on the eutrophic impact of Buntingford STW | NRA | TWUL | n.a. | | | ● | ● | |
| Contact: Dave Leeming | | | | | | | | | | |
| 18. | To ensure all river reaches in the catchment consistently achieve their Short-Term River Quality Objectives | Complete improvements at Hatfield Heath STW | TWUL | | n.a. | ----- by 2000 ----- | | | | ● |
| Contact: Derek Tinsley | | | | | | | | | | |
| 19. | To consider the need for long-term River Quality Objectives in the catchment | Obtain the views of the public and organisations with interest in the water environment through the Annual Review for the CMP | NRA | | <2 | | ● | ● | | |
| Contact: Derek Tinsley | | | | | | | | | | |
| 20. | To minimise the adverse impacts of surface water disposal on the water environment | Prepare a report on the preferred method of surface water disposal in different parts of the catchment | NRA | LAs TWUL | <15 | ● | ● | | | |
| Contact: Dave Rylands | | | | | | | | | | |
| 21. | To ensure protection of groundwater and public water supplies in the areas north of Hertford and Ware, where mineral extraction sites are to be restored by landfilling with wastes | Discuss the way forward for these sites | HCC/NRA | | 5 | ● | ● | | | |
| | | Report back on decisions made | HCC/NRA | | <1 | | ● | | | |
| | | Carry out a risk assessment for the sites | NRA | | n.a. | | ● | ● | ● | ● |
| Contact: Ian Davey | | | | | | | | | | |

Derek Tinsley.

PLEASE AMEND AND RETURN
THIS COPY BY 26/05/95 TO:

TIM KNIGHT
CATCHMENT PLANNING OFFICER
SUNBURY

**THE WANDLE, BEVERLEY BROOK, HOGSMILL
CATCHMENT MANAGEMENT PLAN
ACTION PLAN**

DRAFT

FOREWORD BY AREA MANAGER (SE) TO FOLLOW

PLEASE NOTE - CATCHMENT MAP TO BE INSERTED ON REVERSE OF FRONT COVER..

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1. CATCHMENT VISION

Our vision is to achieve and maintain an improved state of well-being for the Wandle, Beverley Brook, Hogsmill river catchment through the management of conflicting demands by NRA Thames Region working in partnership with all interested parties in order to pass it on to future generations in an improved state of health.

Such a vision can only be realised through active community participation in an adaptive catchment management process which embraces the principles of environmentally sustainable action.

This approach is essential given the unique characteristics of the Wandle, Beverley Brook and Hogsmill river catchment. The range of pressures resulting from intense urbanisation in terms of floodplain encroachment, water usage, effluent disposal and demand for water related recreation must be balanced against the need to protect and enhance the diverse ecology, industrial/archaeological heritage and landscape associated with the local water environment.

The identification through the public consultation process of a series of objectives for the catchment form the bridge between co-ordinated short term actions, as set out in the Activity Plan (see Section 6), and our long term vision for the catchment.

These key strategic objectives are :

1. To maintain and improve surface and groundwater quality throughout the catchment.
2. To alleviate low flow problems in the lower reaches of the Beverley Brook and upper reaches of the River Wandle.
3. To integrate the management of environmentally sensitive flood defence works with the control of surface water runoff.
4. To protect and enhance permanent water bodies throughout the catchment.
5. To improve management techniques for instream and bankside riverine habitats
6. To seek to minimise the environmental impact of water control structures.
7. To balance the needs between the recreation and conservation uses of rivers and stillwaters.
8. To maintain and improve the fisheries status of rivers within the catchment.
9. To promote local pride in the water environment.

2. INTRODUCTION

THE CONCEPT OF CATCHMENT MANAGEMENT PLANNING

The rivers, lakes, estuaries and coastal waters of England and Wales have never before been subject to such large and rapidly increasing demands from the users of water. Many different uses interact or compete for water and will inevitably come into conflict with one another. The National Rivers Authority is the major manager of the water environment in England and Wales and has the responsibility to reconcile conflicts between water users. Our Mission Statement expresses the following principles:

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.

We have chosen to use the Catchment Management Planning Process to translate these principles into action. The Consultation Report and the Action Plan describe our vision for each catchment, identify issues and promote actions that may be taken to resolve them. The plans also provide the means of promoting two key aspects of environmental management - sustainable development (see Section 6) and water quality objectives. This Action Plan primarily covers the 5 year period 1995 - 2000 and will be reviewed annually.

WATER QUALITY OBJECTIVES.

The NRA has strategic targets known as River Quality Objectives (RQOs) for all rivers. RQOs provide a basis for water quality management decisions and are based on a use-related classification scheme. Five uses have been proposed for rivers (River Ecosystem, Special Ecosystem, Abstraction for Potable Water Supply, Industrial or Agricultural Abstraction, Water Sports). Standards have been developed for the River Ecosystem (RE) Use comprising five quality classes:

- RE1: Water of very good quality suitable for all fish species;
- RE2: Water of good quality suitable for all fish species;
- RE3: Water of fair quality suitable for high class coarse fish populations;
- RE4: Water of fair quality suitable for coarse fish populations;
- RE5: Water of poor quality likely to limit coarse fish populations.
- U : Water of bad quality in which fish are unlikely to be present or insufficient data available to classify.

The standards defining RE classes reflect the chemical quality requirements of different types of riverine ecosystem. The standards relate primarily to the degree of organic pollution in our rivers, but also cover other widespread substances known to be toxic to fish and the ecosystems that support healthy fish populations.

The following table shows short-term objectives in terms of RE use for river reaches within the catchment and should be considered as achievable stepping stones along the way to longer term goals. The actual RE classes achieved between 1991 and 1993 are also shown.

| WATER QUALITY OBJECTIVES FOR RIVER REACHES WITHIN THE CATCHMENT | | | |
|---|----------------------------------|-----------|--------------------------|
| RIVER | REACH | RQO(YEAR) | RE ACHIEVEMENT 1991-1993 |
| HOGSMILL | BOURNE HALL TO HOGSMILL STW | RE3(1994) | RE3 |
| HOGSMILL | HOGSMILL STW TO RIVER THAMES | RE4(2000) | RE5* |
| BEVERLEY BROOK | WORCESTER PARK STW TO PYL BROOK | RE4(2000) | RE6* |
| BEVERLEY BROOK | PYL BROOK TO THE THAMES TIDEWAY | RE4(2000) | RE5* |
| PYL BROOK | SUTTON STW TO BEVERLEY BROOK | RE3(1994) | RE2 |
| WANDLE (CARSHALTON ARM) | SOURCE TO THE WANDLE | RE2(1994) | RE2 |
| WANDLE (BEDDINGTON ARM) | WANDLE PARK TO CONFLUENCE | RE3(1994) | RE3 |
| WANDLE | CONFLUENCE TO BEDDINGTON STW | RE2(1994) | RE2 |
| WANDLE | BEDDINGTON STW TO THAMES TIDEWAY | RE4(2000) | RE4* |
| * investment works scheduled in activity plan to ensure compliance with short-term RQO. | | | |

The formal consultation process highlighted strong support for a further improvement of water quality to a level suitable for high class coarse fish populations downstream of Beddington STW. An RQO of RE4 for the Beverley Brook through Wimbledon Common and Richmond Park was also widely considered as inappropriate for such a high profile area of public open space.

The establishment of long-term river quality objectives (LTRQOs) of RE3 downstream of both Beddington and Worcester Park STWs will be considered as part of the Asset Management Plan (AMP3) negotiations between Thames Water Utilities Ltd. (TWUL) ; Office of Water Services (OFWAT) and NRA TR which cover investment between the years 2000 and 2005.

RE classes, along with the other four recognised uses to which river reaches may be put, will eventually underpin statutory water quality objectives (SWQOs); a timetable for which has yet to be provided by the DoE. Notes on the implementation of SWQOs are given in Appendix A.

3. REVIEW OF THE CONSULTATION PROCESS

The Wandle, Beverley Brook, Hogsmill CMP Consultation Report was launched on the 14th of November 1994 and the formal consultation period ended on the 31st of January 1995. 107 (60% of the consultees) responded, 62% of these within the consultation period. All written responses received were logged onto a database and acknowledgement letters were posted within 3 days of receipt of correspondence. The responses were then read in detail and cross referenced against the issues/options raised in the Consultation Report and additional comments recorded. All responses received provided an invaluable contribution to the formulation of the Action Plan for this CMP.

A copy of the "Report on Public Consultation" for this CMP can be obtained by writing to the address on the front page.

Of the 500 Consultation Reports published, 392 were distributed to consultees, 51 to internal NRA staff and 57 to colleges and central/branch/mobile libraries throughout the catchment. 5000 Summary Booklets and 60 colour posters were similarly distributed.

In summary the consultation process confirmed:

- the most contentious issues as :
 - a. the need for improvements in river water quality downstream of the 3 TWUL STW's;
 - b. the impact of the half-tide weir and micro-turbine on the River Wandle delta;
 - c. the impact of groundwater abstraction on the spring-fed ponds on the upper reaches of the River Wandle;
- a natural grouping of the 30 issues identified in the consultation report into 9 principal aims for the CMP;
- 2 new issues for the NRA CMP working party to consider;
- 10 new options for action under existing issues;
- 5 key recommendations for improved public consultation;
- strong support for the content/style of the text and maps contained within the consultation report.

Meetings were held in March/April 1995 with relevant parties to agree a way forward on the contentious issues and with internal staff to agree catchment specific work and investment proposed by NRA TR for inclusion in the Activity Plan (see section 6).

4. OVERVIEW OF CATCHMENT USES AND ACTIVITIES.

The River Wandle, Beverley Brook and Hogsmill River catchments cover an area of 339 square kilometres between the River Thames and the dip slope of the North Downs to the south. Home to nearly a million people the catchment is predominantly urban in nature with **housing development*** continuing to exert pressure on the water environment. The decline of heavy industry has paid environmental dividends, in terms of reducing **industrial effluent disposal**, but treated **sewage effluent disposal** from such a highly concentrated population has inevitably had an impact on surface water quality. During low flow conditions treated sewage effluent can account for in excess of 90% of the river flow in the Wandle and Beverley Brook. The impermeable nature of urban development combined with floodplain encroachment has also resulted in a fundamental alteration to the natural hydrological regime with river levels rising very quickly during storm events. The economic benefits of protecting such heavily urbanised areas from flooding were used to justify large scale **flood water conveyance** schemes on the lower reaches of all three rivers particularly during the 1960's and 1970's.

Local groundwater resources are utilised to supplement bulk transfers from the non-tidal River Thames to meet water demand within the catchments; over 98% of the 240Ml/day licensed maximum **groundwater abstraction** within the catchment is used for potable supply. Groundwater abstraction has undoubtedly affected groundwater levels and base-flow in the River Wandle and Hogsmill River, which are both spring fed. **River water abstraction** from the Wandle at Goat Bridge is used to compensate flows in Carshalton ponds upstream under drought conditions. The natural quality of groundwater from the chalk aquifer remains good, but localised groundwater within the superficial gravel aquifers to the north of the catchment remain polluted from historical industrial activity. Transport and disposal of domestic solid waste currently poses a limited threat to ground and surface water. However, the future **disposal of solid waste** to backfill pits excavated for **gravel extraction** purposes, in the Beddington/Mitcham Area of Opportunity (BMAO), is under consideration following the Secretary of States recent decision to allow an appeal by TWUL.

The combination of poor water quality caused by urban storm water run-off and treated sewage effluent, increased stream velocity and engineered concrete river channels has impacted heavily on the ecological status of many reaches of river particularly with regard to **fisheries** status. Enhancement opportunities do exist, especially where rivers run through existing public open space. These would also create added value to public enjoyment of the water environment, as well as improving ecological abundance and biodiversity.

Making the most of the **recreation, amenity and education** opportunities offered by the water environment within such a heavily populated catchment is a prime objective e.g. the micro-turbine on the River Wandle as a modern day example of the historical use of the river for **water power**. The **conservation** of existing ecologically important water dependent habitats, **riverine landscapes, sites of archaeological importance** and the rehabilitation / enhancement of degraded river reaches will increase the value that people living and working within the catchment place on the water environment.

* 16 agreed catchment uses and activities identified.

KEY CATCHMENT STATISTICS:

GENERAL

| | |
|--|--|
| Population (approximate) | 985 000 |
| Catchment area | 339 sq km |
| Urban/suburban area | 132 sq km (39%) |
| Length of river (source to River Thames) | 19.0 kms (Wandle) 14.3 kms (Beverley) 9.9 kms (Hogsmill) |

WATER RESOURCES

| | |
|--|---------------------|
| Average annual rainfall | 694 mm |
| Average flow (River Wandle) | 143 MI/d |
| (Beverley Brook) | 47 MI/d |
| (Hogsmill River) | 84 MI/d |
| Total licensed groundwater abstraction | 240 MI/d (estimate) |

WATER QUALITY (GQA 1991 - 1993; see appendix B)

| | | |
|---|---------|---------------|
| River length | Class A | 0 km |
| | Class B | 1.8 km (3%) |
| | Class C | 14.1 km (32%) |
| | Class D | 14.5 km (33%) |
| | Class E | 11.7 km (26%) |
| | Class F | 2.4 km (6%) |
| Length of EC designated cyprinid fishery (Wandle) | | 6.6 km |

FLOOD DEFENCE

| | | |
|--|------------------|-----------|
| Length of statutory main river | (Wandle) | 26.7 km |
| | (Beverley Brook) | 23.1 km |
| | (Hogsmill) | 9.5 km |
| Catchment area at risk from flooding once every 50 years (observed & predicted) | | 5.0 sq km |

5. SUSTAINABLE DEVELOPMENT

The concept of sustainable development, now recognised by governments across the world, acknowledges that people are putting pressure on both local and global resources to an extent which could cause permanent environmental damage.

The Government, in embracing sustainable development, is attempting to reconcile the need for future development with the need to protect the environment. This is where the nation's **land-use planning system can have a significant influence** and why NRA TR is putting such effort into working in partnership with local planning authorities.

This is essential as the NRA, though well placed to influence some of the factors affecting the water environment, has very little control over the mechanisms which determine land use change on a catchment-wide basis. In the case of the area covered by the CMP, this is largely the responsibility of the twelve Local Planning Authorities through the implementation of the Town and Country Planning Acts.

The policies in statutory development plans are important in this regard in that they set out the **framework for land use change** and provide the key reference in determining development applications.

Since its creation in 1989 NRA TR has been working with the Local Authorities within this catchment to ensure that policies to protect and enhance the water environment reflect concerns over the potential impact of new development on water quality, quantity and ecological status.

To facilitate effective incorporation of such policies in statutory development plans, NRA TR is currently preparing land use statements based on catchment specific issues as identified in the CMP. An important factor in helping the NRA to justify the need for inclusion of a specific policy in a statutory development plan will be the recorded strength of feeling from consultees on those water issues related to land use. In responding to this CMP Consultation Report, the **local community is playing a role in influencing the future sustainable development of the water environment.**

NRA TR is attempting to ensure that the activities to be carried out in this Action Plan meet similar **sustainability criteria** to policies promoted in statutory development plans. Such an approach has been made possible by adapting DoE advice given to Local Authorities in a publication entitled '**Environmental Appraisal of Development Plans**'. The activities shown in section 6 were scored against twelve sustainability criteria. Examples are shown in Appendix 3.

By definition, the implementation of activities with a high negative score would not contribute to sustainable development. However, the need to take account of additional social, political and economic benefits might allow such activities to progress. It is necessary to emphasise that **sustainable development does not mean presumption against development.**

If sustainability is to be developed as a practicable objective then clear measurement of progress will be required. NRA TR is aware of a growing need to identify key environmental indicators for the water environment to help Local Authorities and communities in moving towards sustainability through Local Agenda 21 Initiatives. Information collected in this CMP e.g length of river meeting its quality objective, is being modified for use as environmental indicators.

The CMP Annual Review will also contain an Education Supplement for use by local schools across all key stages which will contain information on environmental indicators, local water issues and general river quality performance. It is hoped that by encouraging the direct involvement of the younger generation in the catchment management process, the ensuing sense of ownership and local pride in the water environment will help minimize future problems.

6. ACTIVITY PLAN

Implementation of the plan is based on the 33 key issues set out below. These have been modified in the light of consultation responses and their resolution is considered necessary in order that the plan can be successful in delivering real sustainable improvements within the river catchment.

The issues are presented with a number of activities, a target timetable and the identification of parties responsible. Issues which are similar or interdependent have been grouped under the nine strategic objectives spawned by public consultation. New issues and activities raised following consultation are identified (in italics) together with activity options which will not be progressed within the 5 year life span of the CMP.

The NRA activities will be incorporated into the appropriate annual Business Plan which is used to cascade objectives and tasks to individual members of staff. NRA staff responsible for delivering these activities are identified in the Activity Plan for progress monitoring purposes.

GLOSSARY OF ABBREVIATIONS FOR PARTNERS IN ACTIVITY PLAN

| | | | |
|------|--|------|---------------------------------------|
| BCU | British Canoe Union | NT | National Trust |
| BS | Bourne Society | PLA | Port of London Authority |
| CGWT | All interested Conservation Groups and Wildlife Trusts | RBK | Royal Borough of Kingston-upon-Thames |
| DoE | Department of Environment | RPA | Royal Parks Agency |
| EN | English Nature | SC | Sports Council |
| EEBC | Epsom and Ewell Borough Council | SCC | Surrey County Council |
| LAs | Local Authorities | SDW | Sutton District Water |
| LBC | London Borough of Croydon | TBG | Tidy Britain Group |
| LBM | London Borough of Merton | TDC | Tandridge District Council |
| LBR | London Borough of Richmond-upon-Thames | TWUL | Thames Water Utilities Limited |
| LBS | London Borough of Sutton | WDN | Wandle Delta Network |
| LBW | London Borough of Wandsworth | WG | Wandle Group |
| LEU | London Ecology Unit | WHL | Wandle Heritage Limited |
| LWF | London Walking Forum | WIM | Wandle Industrial Museum |
| MAFF | Ministry of Agriculture, Fisheries and Food | WUs | Water Utilities |
| MHS | Merton Historical Society | | |

OBJECTIVE 1 : TO PROTECT AND IMPROVE SURFACE AND GROUNDWATER QUALITY.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|--------------------|-------|----|----|----|----|----|----|
| ISSUE 1 : POOR CHEMICAL RIVER WATER QUALITY DOWNSTREAM OF THE THREE TWUL SEWAGE TREATMENT WORKS | | | | | | | | |
| 1/1 Undertake improvement works at Worcester Park STW to achieve short-term RQO of RE4 by year 2000. (Output - Construction works by 1999). | TWUL | 11350 | → | → | → | → | → | → |
| 1/2 Undertake improvement works at Hogsmill STW to achieve short-term RQO of RE4 by year 2000. (Output - Construction works by 1999). | TWUL | 12290 | → | → | → | → | → | → |
| 1/3 Undertake improvement works at Beddington STW to maintain downstream RQO at RE4; currently achieved through over-performance; and improve screening. (Output - Construction works by 1999). | TWUL | unk | → | → | → | → | → | → |
| 1/4 Establish feasibility of a long term RQO of RE3 downstream of Beddington and Worcester Park STWs. (Output - NRA report 4/96). | NRA TWUL | unk | | | | | | |
| ISSUE 2 : LINDANE DISCHARGES FROM THE CATCHMENT CONTRIBUTE TO FAILURE OF EC DANGEROUS SUBSTANCES DIRECTIVE IN MAIN RIVER THAMES | | | | | | | | |
| 2/1 NRA to fully debate with DoE implications of directive compliance. (Output - to be reported in annual CMP review 6/96). | NRA DoE TWUL | unk | | | | | | |
| ISSUE 3 : IMPACT OF URBAN STORMWATER RUNOFF ON RIVER WATER QUALITY | | | | | | | | |
| 3/1 Complete and supply Local Authorities with NRA surface water zoning information. (Output - catchment zoning maps 12/95). | NRA LAs | | | | | | | |
| 3/2 Utilise Local Authority Town and Country Planning, NRA Land Drainage consents and other appropriate controls to minimise impacts from new developments. (Output - new developments which meet this aim). | NRA LAs | | | | | | | |
| 3/3 Implement recommendations from Source Control pilot project on the Upper Lee as appropriate. (Output - NRA report 4/97). | NRA | | | | | | | |
| 3/4 Create wetlands on Tooting Bec Common to mitigate impact of urban stormwater run-off. (Output - Construction Works ?). | LBW NRA | | | | | | | |

OBJECTIVE 1 : TO PROTECT AND IMPROVE SURFACE AND GROUNDWATER QUALITY.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|--|------|----|----|----|----|----|----|
| ISSUE 4 : NUISANCE MIDGE SWARMS BELOW WORCESTER PARK SEWAGE TREATMENT WORKS. | | | | | | | | |
| 4/1 Introduce more stringent suspended solids limit in discharge consent. | Not possible within 5 year span of CMP as no investment for necessary improvements to plant agreed as part of AMP2 negotiations. | | | | | | | |
| 4/2 Continue to jet wash silts at appropriate times of year to desssiminate midge swarms. (Output - jet washing as required). | NRA | 3 | | | | | | |
| 4/3 Instigate feasibility study into enhancement of river channel morphology to reduce silt entrapment. (Output - NRA Report 4/97). | NRA | unk | | | | | | |
| 4/4 Implement local sampling study to determine relationship between silt accretion and sewage treatment works effluent quality. (Output - NRA Report 7/95). | NRA | 1.5 | | | | | | |
| ISSUE 5 : CONFLICT BETWEEN INCREASED PUBLIC ACCESS TO WATERFRONT AND PUBLIC HEALTH CONSIDERATIONS. | | | | | | | | |
| 5/1 NRA to liase with London Walking Forum to produce and distribute appropriate information to all interested parties. (Output - Information Leaflet ?). | NRA LWF | | | | | | | |
| 5/2 Identification and removal of illegal foul sewer connections to surface water outfalls. (Output - statistics in annual CMP review). | NRA TWUL | | | | | | | |
| 5/3 NRA to continue working with DoE in defining appropriate bacteriological standards for the inland recreational waters. (Output - DoE guidance to be reported on availability in annual CMP review). | NRA DoE | | | | | | | |
| 5/4 Investigate cost/benefit of improving bacteriological quality of consented treated swgawe effluent discharges within the catchment. | Action deemed inappropriate at the current time in the absence of appropriate guidance from the DoE. | | | | | | | |

OBJECTIVE 1 : TO PROTECT AND IMPROVE SURFACE AND GROUNDWATER QUALITY.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|---|--|-----------------------|----|----|----|----|----|----|
| ISSUE 6 : PRESENCE OF BLUE GREEN ALGAE IN STILL WATERS. | | | | | | | | |
| 6/1 Richmond Park ponds survey now complete. (Output - NRA Report to Royal Parks Agency ?) | NRA RPA | n/a | | | | | | |
| 6/2 Instigate Carshalton Ponds survey on Upper Wandle. (Output - NRA Report to LBS as appropriate). | NRA LBS | 1 | | | | | | |
| ISSUE 7 : FREQUENCY OF POLLUTION INCIDENTS IN CONTROLLED WATERS. | | | | | | | | |
| 7/1 Public awareness raised by ongoing pollution prevention campaigns e.g. 'oil care' and 'emergency hotline', school talks and NRA attendance at local events. (Output - Distribution of PR resources). | NRA | n/a | | | | | | |
| 7/2 NRA contribution to new exhibition on the River Wandle at the Old Liberty Mill Wheelhouse. (Output - PR leaflets and static display boards). | WHL NRA | 1 | | | | | | |
| 7/3 NRA programme of pollution prevention at; Davis Road, Cox Lane, Chessington (Hogsmill); Longmead Industrial Estate, Epsom (Hogsmill); Garth Road Industrial Area, Morden (Beverley); Deer Park Road Industrial Area, Merton (Wandle); Willow Lane Industrial Estate, Mitcham (Wandle). | NRA | 2 2 2 3 4 | | | | | | |
| 7/4 NRA Emergency Response Plans to be drawn up to improve response to pollution incidents; (Output - Hogsmill River Emergency Plan; River Wandle Emergency Plan; Beverley Brook Emergency Plan.) | NRA LAs? | 1 0.5 0.5 | | | | | | |
| 7/5 Evaluation of new technology and improved working methods for identifying, tracing and alleviating impacts of water pollutants. (Output - update in CMP review as appropriate). | NRA WRc? | unk | | | | | | |
| 7/6 Implementation recommendations from NRA sponsored R&D Report into pollution from highway drainage. (Output - CIRIA Report No. 142). | NRA | | | | | | | |
| 7/7 Pollution investigation into nuisance odours from Tolworth Brook (Hogsmill) under low flow conditions. | Postponed pending direct pollution complaints to NRA Emergency Hotline . | | | | | | | |

OBJECTIVE 1 : TO PROTECT AND IMPROVE SURFACE AND GROUNDWATER QUALITY.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|------------|------|----|----|----|----|----|----|
| ISSUE 8 : VULNERABILITY OF LOCAL GROUNDWATER QUALITY TO POLLUTION. | | | | | | | | |
| 8/1 Promote NRA 'Policy and Practice for the Protection of Groundwater' to raise public awareness. (Output - distribution of document and associated PR material as appropriate). | NRA | | | | | | | |
| 8/2 Prepare and promote 1:100 000 maps showing aquifers to be protected and detailed maps showing areas around key boreholes which require protection. (Output - maps 3/96). | NRA | | | | | | | |
| 8/3 Hold technical seminar for local authorities and all interested parties on local groundwater issues. (Output - Seminar ?). | NRA LAs | | | | | | | |
| 8/4 Implement recommendations from NRA TR Pilot Study on Integrated Surface Water Management. (Output - ?) | NRA | | | | | | | |
| 8/5 Improve and review groundwater monitoring programme. (Output - ongoing ?). | NRA | | | | | | | |
| 8/6 Compile inventory of known contaminated land sites in the catchment in the absence of a UK Government Contaminated Land Register. (Output - NRA Report ?). | NRA LAs | | | | | | | |
| See also activities 3/2, 3/3, 7/1, 7/6. | | | | | | | | |

OBJECTIVE 2 : TO ALLEVIATE LOW FLOW PROBLEMS.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|---|------------------------|------|----|----|----|----|----|----|
| ISSUE 9 : PERIODIC LOW FLOWS IN SPRING-FED PONDS ON THE UPPER WANDLE. | | | | | | | | |
| 9/1 NRA to update LBS on the impact of local groundwater abstraction on spring-fed ponds and work jointly with all interested parties in implementing any agreed actions. (Output - NRA Report to LBS 7/95). | NRA LBS SDW C | | | | | | | |

OBJECTIVE 2 : TO ALLEVIATE LOW FLOW PROBLEMS.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|---|-------------------|------|----|----|----|----|----|----|
| ISSUE 10 : IMPACT OF CONTINUED URBAN DEVELOPMENT ON GROUNDWATER RESOURCES. | | | | | | | | |
| 10/1 Set minimum acceptable groundwater levels for all water dependent SSSIs within the catchment. (Output - Water Level Management Plans for Stones Road Pond SSSI 12/95?). | EN MAFF NRA | | | | | | | |
| 10/2 Identify development pressure points through NRA Thames 21 and NRA TR Water Resources Strategies and ensure statutory development plans promote suitable policies for sustainable groundwater resource usage. (Output - developments which meet this aim). | NRA | | | | | | | |
| 10/3 Promote efficient use of water. (Output - distribution of appropriate PR material). | NRA LAs WUs | | | | | | | |
| 10/4 Raise awareness of impact of Golf Course development proposals on water environment. (Output - Compile and promote specific NRA guidance note to all interested parties ?). | NRA | | | | | | | |
| ISSUE 11 : LOW FLOWS IN BEVERLEY BROOK DOWNSTREAM OF THE FLOOD RELIEF CULVERTS. | | | | | | | | |
| 11/1 Set up multifunctional NRA working party to project manage an expanded NRA consultants brief, on a proposed strategic flood study of the Beverley Brook catchment, to establish ecologically acceptable minimum flows. (Output - Implement report recommendations ?) | NRA | 50 | | | | | | |

OBJECTIVE 3 : TO INTEGRATE THE MANAGEMENT OF ENVIRONMENTALLY SENSITIVE FLOOD DEFENCE WORKS WITH CONTROL OF SURFACE WATER RUN-OFF.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|---|------|----|----|----|----|----|----|
| ISSUE 12 : LACK OF HISTORIC AND MODELLED FLOODING DATA AGAINST WHICH TO ASSESS FLOOD DEFENCE STANDARDS OF SERVICE. | | | | | | | | |
| 12/1 Construct an ONDA type hydraulic model following completion of Section 105 Surveys for the Wandle, Beverley Brook and Hogsmill subcatchments. | The progress of Circular 30/92 Section 105 Survey Programme to be determined by NRA Board by 06/95. | | | | | | | |

OBJECTIVE 3 : TO INTEGRATE THE MANAGEMENT OF ENVIRONMENTALLY SENSITIVE FLOOD DEFENCE WORKS WITH CONTROL OF SURFACE WATER RUN-OFF.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|--|------|----|----|----|----|----|----|
| ISSUE 13 : REDRESS THE BALANCE BETWEEN THE NEED FOR FLOOD PROTECTION ON THE HOGSMILL RIVER AND ENVIRONMENTAL REQUIREMENTS. | | | | | | | | |
| <p>13/1 Completely rebuild existing river channel following cost/benefit analysis.</p> <p>13/2 Modify existing channel as one scheme following cost/benefit analysis.</p> <p>13/3 Modify channel as redevelopment opportunities arise.</p> <p>see also activity 23/3.</p> | All activity held in abeyance pending satisfactory funding and resolution of Issue 11. | | | | | | | |
| ISSUE 14 : NRA TR HAS NO EFFECTIVE LEGISLATIVE CONTROL IN SETTING SURFACE WATER RUN-OFF STORAGE/CRITERIA FROM NEW DEVELOPMENTS WITHIN 'RED' ZONES. | | | | | | | | |
| <p>14/1 Complete surface water zoning exercises for the River Wandle and Hogsmill River. (Output - catchment zoning maps 4/96). links with activity 8/4.</p> <p>14/2 Promote zoning maps and appropriate policies to Local Authorities for inclusion in statutory development plans. (Output - development which meet this aim).</p> <p>14/3 NRA and all interested parties to lobby DoE to seek changes in legislation to increase powers in this regard.</p> | NRA | 20 | | | | | | |
| ISSUE 15 : INSUFFICIENT DATA ON RIVER LEVELS WITHIN CERTAIN RIVER REACHES. | | | | | | | | |
| <p>15/1 Install appropriate river level gauges on upper reaches of Beverley Brook and Norbury Brook. (Output - construction works 12/98).</p> | NRA | 20 | | | | | | |

OBJECTIVE 4 : TO PROTECT AND ENHANCE PERMANENT WATERBODIES.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|--------------------|------|----|----|----|----|----|----|
| ISSUE 18 : DEFICIENCY OF PERMANENT WATERBODIES WITHIN FLOOD STORAGE AREAS. | | | | | | | | |
| 18/1 NRA to design-in permanent waterbodies within new flood storage areas where appropriate and to encourage partnership approach with external bodies in actively managing resource for conservation, recreation and education purposes. (Output - Creation of flood storage areas which meet this aim - progress to be reported in CMP reviews). | NRA LAs CON | unk | | | | | | |
| 18/2 Retrofit permanent waterbodies within appropriate existing flood storage areas. (Output - Permanent waterbody in Derwent Road flood storage area on Beverley Brook 12/96). | NRA LBM | 10 | | | | | | |
| 18/3 NRA in partnership with local authorities and conservation groups to compile a catchment list of historic, existing and potential sites for permanent waterbodies and promote various funding initiatives available. (Output - NRA Report and catchment map ?). See also activities 3/3, 3/4, 8/4. | NRA LAs CON | 27 | | | | | | |
| ISSUE 19 : NEED TO MAXIMISE ENVIRONMENTAL AND RECREATIONAL POTENTIAL ASSOCIATED WITH THE STRATEGIC PROVISION OF FLOOD STORAGE WITHIN THE BEDDINGTON/MITCHAM AREA OF OPPORTUNITY (BMAO). | | | | | | | | |
| 19/1 NRA to work in partnership with TWUL, LBS and other interested parties to realise the potential of the BMAO for a variety of water uses following outcome of the Public Enquiry on proposed gravel extraction and landfill proposals. (Output - Restoration works which meet these aims). | NRA TWUL LBS | | | | | | | |
| ISSUE 20 : NEED TO PROTECT AND ENHANCE STILL WATERS. | | | | | | | | |
| 20/1 NRA, Local Authorities and all interested parties to resolve conflict between uses of Wimbledon Park Lake and other water bodies. (Output - outcome of liaison meetings to be reported in annual CMP reviews). see also activity 18/3. | NRA LAs WS | | | | | | | |

OBJECTIVE 6 : TO MAXIMISE THE ENVIRONMENTAL BENEFIT OF WATER CONTROL STRUCTURES.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|-------------------|------|----|----|----|----|----|----|
| ISSUE 26 : MINIMISE THE IMPACT OF SUBSTANTIAL WATER CONTROL STRUCTURES. | | | | | | | | |
| 26/1 Ensure coarse fish passes are built into existing structures when renovated. (Output - Construction works as appropriate). | NRA | | | | | | | |
| 26/2 Ensure that new structures are subject to full environmental impact assessment. (Output - structures built that meet this aim). | NRA | | | | | | | |
| 26/3 <i>NRA to work with interested parties to assess feasibility of altering operational regime of water control structures to be more sympathetic with industrial heritage; particularly on the River Wandle. (Output - outcome of liaison meetings to be reported in annual CMP reviews).</i> | NRA WIN WHL | | | | | | | |
| ISSUE 27 : MINIMISE ENVIRONMENTAL IMPACT OF THE HALF-TIDE WEIR ON THE RIVER WANDLE. | | | | | | | | |
| 27/1 <i>Implementation of an appropriate de-silting programme for the Wandle delta following NRA fishery survey - see activity 31/1 (Output - remedial works ?)</i> | LBW NRA | | | | | | | |
| 27/2 <i>NRA to work in partnership with LBW to secure funding for substantial ecological enhancement of the Wandle delta to aid economic regeneration. (Output - Financial bid under Single Regeneration Budget ?)</i> | LBW NRA | | | | | | | |
| 27/3 <i>Promotion of policies for consideration in development site planning briefs to aid sustainable development of Wandle delta area. (Output - planning briefs which meet this aim).</i> | LBW NRA | | | | | | | |
| 27/4 <i>Implement full environmental/economic reappraisal of the half-tide weir if sustainable development of the Wandle delta has not occurred by 2005.</i> | LBW | | | | | | | |

OBJECTIVE 9 : TO PROMOTE COMMUNITY PRIDE IN LOCAL WATER ENVIRONMENT.

| Activity | Resp | Cost | 95 | 96 | 97 | 98 | 99 | on |
|--|----------------------------------|------|----|----|----|----|----|----|
| ISSUE 32 : IMPACT OF RUBBISH AND LITTER. | | | | | | | | |
| 32/1 NRA to continue working on 'Thames Clean' campaign with Tidy Britain Group and all interested parties of anti-litter and tidy river bank campaigns. (Output - clean-ups events to be reported in annual CMP review). | TBG NRA PLA LAs TWUL | 50 | | | | | | |
| ISSUE 33 : NEED TO PROMOTE LOCAL WATER ISSUES VIA FORMAL EDUCATION CHANNELS. | | | | | | | | |
| 33/1 Promote NRA 'Riverwork' primary school teaching pack, NRA 'Sources' secondary school teaching pack and National RiverWATCH schemes. (Output - every school in catchment to receive free copy of relevant pack by 12/95). | NRA | 1 | | | | | | |
| 33/2 Revise and update NRA River Fact File on the Wandle, Beverley Brook and Hogsmill catchment. (Output - publish revised fact file 12/95). | NRA | 2 | | | | | | |
| 33/3 NRA to work in partnership with local education inspectors and teachers in production of an Education Supplement as an integral part of the annual CMP review. (Output - Education Supplement in annual CMP review 06/96). | NRA LAs | | | | | | | |
| 33/4 Develop 'key indicators' on well-being of local water environment with all interested parties and adapt for use within primary/secondary schools within catchment. (Output - key indicators in Education Supplement section of annual CMP review 06/96). | LEU LAs NRA | | | | | | | |

7. FUTURE REVIEW AND MONITORING

The NRA TR will be jointly responsible, with other identified organisations and individuals, for implementing this Action Plan. Progress will be monitored and reported annually. These reviews will examine the need to update the CMP in the light of changes in the catchment and will take the form of a short progress report including work achieved compared with that planned. An Educational Supplement for use by local schools will also be included. The period between major revisions will normally be 5 years

Further details of issues and activities in this Catchment Management Plan can be obtained from:

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Appendix A: Overview of the Statutory Water Quality Objectives Scheme

Section 83 of the Water Resources Act 1991 provides powers for the Secretary of States to set WQOs. The purpose of WQOs is to establish clear quality targets in Controlled Waters, on a statutory basis, providing a commonly-agreed planning framework for regulatory bodies and dischargers alike. The WQO scheme is use-related, based upon a range of water quality standards appropriate for the protection of the 'uses' to which waters may be put. Five river uses are envisaged: River Ecosystem; Special Ecosystem; Abstraction for Potable Supply; Agricultural Abstraction; and Watersports. A classification scheme for the River Ecosystem use has been introduced through Regulations. No other river use has yet reached this stage of development.

The River Ecosystem Use

The River Ecosystem use is the backbone of the WQO scheme for rivers, and the standards defining its use classes have been introduced by *The Surface Waters (River Ecosystem) (Classification) Regulations 1994*. In common with all sets of standards supporting the WQO scheme, these standards have been derived for the purpose of target-setting. They incorporate standards from the GQA scheme, but also include other determinands. The statistical methods involved in compliance assessment take account of statistical error arising from spot-sampling for chemical determinands, the concentrations of which may vary significantly overtime, and also apply 'benefit of the doubt' as a means of ensuring that all failures to meet quality targets are statistically significant. Further details about the River Ecosystem standards, and the statistical methods involved in the assessment of compliance with these standards, can be found in the document *Water Quality Objectives: Procedures Used by the National Rivers Authority for the Purpose of the Surface Waters (River Ecosystem) (Classification) Regulations 1994*, which is available on request from the Water Quality Planning department of NRA Regional Head Offices.

How River Ecosystem WQOs will be Set

Statutory WQOs based on River Ecosystem targets will be set on a stretch-by-stretch basis within whole river catchments. WQOs will only be applied to the 44,000 kilometres of river stretches routinely monitored by the NRA (i.e. "classified" stretches, defined in further detail in the *NRA Programme for the Monitoring of Water Quality*, available from the Environmental Quality Section at NRA Bristol Head Office). Due account will be taken of planned pollution control investment to ensure that the targets set are achievable. Statutory quality targets will therefore comprise two parts: a River Ecosystem class; and a target date by which compliance with that class should be achieved. The same principle will apply to other WQO uses, for example Special Ecosystem or Watersports, when standards for these uses become available.

The Procedure for Setting WQOs

WQOs will be set on a statutory basis through Notices serviced by the Secretary of State. This will follow an informal consultation exercise undertaken by the NRA on its initial proposals, and then a formal consultation exercise undertaken by the DoE upon revised proposals submitted to it by the NRA. Once formally set, the River Ecosystem quality classes and dates will represent statutory targets. The NRA will then be under a duty to ensure compliance with these targets using the various pollution control powers at its disposal. WQOs may be reviewed after five years.

The Government Timetable

The DoE have not as yet provided the NRA with a timetable for the introduction of statutory WQOs. In the interim, the existing system of non-statutory River Quality Objectives (RQOs) will continue to play a key role in water quality planning and will therefore be translated from NWC classis to an appropriate River Ecosystem use class.

Statutory Objectives Introduced by EC Directives

Designations of river stretches, or points on rivers, under the EC Dangerous Substances Directive (76/464/EEC), the EC Surface Water Abstraction Directive (75/440/EEC) and the EC Freshwater Fisheries Directive (78/659/EEC) already constitute statutory objectives. Implementation of the new water quality schemes will not affect the reporting of compliance with the requirements of these Directives for rivers, not the manner in which designations and compliance are reported in CMPs.

Appendix B: Overview of the General Quality Assessment Classification

The NRA undertakes periodic assessments of the quality of the river water in order to report upon geographical and temporal trends in water quality. The Authority also makes routine annual assessments for internal reporting purposes. One of the key requirements to support these assessments is a consistent classification based on relevant parameters. As a basis for this periodic assessment, the NRA is developing a comprehensive General Quality Assessment (GOA) classification scheme through its R&D programme.

Four 'Window's

Dependent upon the outcome of R&D, it is intended that the GOA classification will comprise four 'windows', each providing a discrete yet complimentary view of the overall quality of river stretches. The first of these windows, the River Chemistry component, has already been introduced. The remaining three windows - Nutrients Quality, Biological Quality, and Aesthetic Quality - are still under development.

The River Chemistry Window

The River Chemistry component of the GOA scheme has already been introduced through *The Quality of Rivers and Canals in England and Wales (1990 to 1992)* (Water Quality Series No.19), and comprises six tiered grades defined by standards for Dissolved Oxygen, BOD and Total Ammonia. These standards are a subset of those defining the River Ecosystem (WDO) Classification, and are broadly consistent with the core standards of the NWC scheme (albeit on a mathematically transformed basis). The appropriate GQA River Chemistry grade is assigned by calculating 'face value' percentiles from water quality monitoring data. The River Chemistry component of the GQA scheme should be used henceforth to support all relevant periodic assessments of the quality of river water. This includes all purposes for which a "snapshot" of the quality of river water is required (with the single exception noted in Appendix 4). Technical details on the usage of the River Chemistry component of the GQA are contained in the NRA Programme for the Monitoring of Water Quality (available from NRA Regional Head Offices or NRA Bristol Head Office).

The Biological Quality Window

The Biological Quality window will provide a national picture of the health of river stretches as reflected by their invertebrate communities. The final classification scheme is still under development, but will be related to an EQI (Environmental Quality Index) relating observed biological diversity and abundance with that predicted by RIVPACS.

The Nutrient Quality Window

The proposed Nutrient Quality window will provide an objective national picture of the concentration of readily available nitrogen and phosphorus in river water. These nutrients are essential for algae and water plants in fresh waters, but commonly occur at concentrations low enough to restrict their growth. They may therefore play an important part in determining the characteristics of the ecosystem that a river stretch is able to support.

The Aesthetic Quality Window

The proposed Aesthetic Quality window addresses the issue of public perception. Public perception of pollution is driven largely by the visual appearance and the odour of water bodies, which are likely to influence the acceptability of the river stretch for various uses. Sometimes, aesthetic problems may indicate underlying ecological problems whereas, in many cases, they may be caused by natural factors, for example foaming resulting from natural substances, strong odours arising from rotting vegetation, or discolouration resulting from humic substances. As the NRA is the regulatory Authority responsible throughout England and Wales for the aquatic environment, it is appropriate that it should address issues of public concern, regardless for any underlying ecological problem.

The Purpose and Value of the GQA

The GQA is independent of the uses to which rivers are put, and therefore provides an objective 'yardstick' which is independent from changes in use-related standards. It therefore supports the periodic assessment of river quality on an objective basis, and thereby provides a basis for monitoring temporal and geographic trends. The NRA can use the GQA, for example, to state with certainty that there was an overall improvement in the general chemical quality of 16% of river length between 1990 and 1993.

Appendix C: SUSTAINABILITY CRITERIA MATRIX.

The table below sets out the environmental appraisal impact matrix which is comprised of twelve environmental stock criteria adapted from DoE guidance on "Environmental Appraisal of Development Plans".

The scoring system used to assess whether the proposed activity is likely to have a positive or negative impact on the environmental stock criteria is set out below:

| | | |
|-----------|----|--------------------------|
| Scoring : | -2 | negative direct effect |
| | -1 | negative indirect effect |
| | 0 | no clear impact |
| | +1 | positive indirect effect |
| | +2 | Positive direct effect |

Appraisal of activities listed in Section 6 was undertaken by the Catchment Planning Team, with a range of expertise in order ensure that the appraisal was a rigorous and objective as possible. Two examples are shown in the table for illustration purposes.

| Activity | Criteria | | | | |
|---|--------------------------------|---------------------|---------------------------------|--------------------|-------------------|
| 28/2 NRA requested to support removal of microturbine Total Score -4 | Natural resources | | | | |
| | Water Conservation and quality | Soil & Land quality | Renewable Natural Resources | Wildlife resources | |
| | 0 (+2) | 0 (0) | -2 (0) | 0 (+2) | |
| | Global sustainability | | | | |
| | Biodiversity | Energy conservation | Non-renewable Natural resources | | |
| 0 (+2) | 0 (0) | 0 (0) | | | |
| (16/4 Channel enhancement & wetland creation Total Score +16) | Quality of Life | | | | |
| | Community wellbeing | Recreational space | Cultural Heritage | Landscape quality | Built environment |
| | -2 (+2) | 0 (+2) | -2 (+2) | +1 (+2) | 0 0 |

As the vision for this CMP embraces the principles of environmentally sustainable action , progression of activity 28/2 is therefore deemed inappropriate at the current time.

NRA TR is aware of the need to develop and refine this methodology as all sustainability criteria are clearly not equitable in terms of weighting and no allowance has been made for overriding social, political and economic benefits which may accrue from the progression of an activity with a negative total score.

Appendix D:

GLOSSARY OF TERMS

| | | |
|-------------------------|---|---|
| Abstraction | - | Removal of water from surface water or groundwater, usually by pumping. |
| Asset Management Plan | - | 5 year investment programmes for the water undertakers e.g. TWUL, drawn up through consultation with the NRA and others which require DoE and OFWAT approval. |
| Baseflow | - | The flow in a river derived from emergent groundwater and spring discharges. |
| Biodiversity | - | A variety of living plants and animals. |
| Blue-green algae | - | Organisms with some properties characteristic of both bacteria and algae - natural inhabitants of many inland waters. |
| Buffer zone | - | A strip of land adjacent to a river which is free from any urban development. |
| Catchment | - | The total area of land which drains to a specified watercourse or waterbody. |
| Coarse fish | - | A freshwater fish which is not of the salmon family. |
| Ecosystem | - | A biological community of interacting organisms and their physical environment. |
| Environmental indicator | - | A measure which can be used to assess the present state of the environment by looking at trends over time. |
| Floodplain encroachment | - | Urban development on flat land adjacent to a river where water is naturally stored during flood conditions. |
| Groundwater | - | Water which is contained within saturated rocks. |
| Riparian | - | Situated on the bank of a river or relating to the legal rights/responsibilities of the landowner of a river bank. |
| Sustainable development | - | Management of the environment to meet the needs of the present without compromising the ability of future generations to do the same. |

Appendix E: NRA EMERGENCY HOTLINE

INSERT SCANNED IMAGES OF OIL CARE AND EMERGENCY HOTLINE LOGOS