

## 1 INTRODUCTION

Canal habitat is listed as a Broad Habitat Type within the UK Biodiversity Action Plan (BAP)<sup>1</sup>, for which a brief UK Habitat Statement has been prepared.

Hampshire once had several inland waterways, which included the Basingstoke, Southampton and Salisbury, Andover, Titchfield, and Portsea Ship canals, and the Itchen, Portsmouth and Arundel, and Salisbury Avon river navigations. Due principally to reduction in commercial viability, lack of management and maintenance, and fragmentation, this waterway system is now significantly diminished. What remains, however, is of significant nature conservation value and the inclusion of canal habitat as a key habitat in the Hampshire BAP is recognition of this.

This action plan recognises that the Hampshire section of the Basingstoke Canal is an integral part of a larger site that extends into Surrey. As the Basingstoke Canal Authority (BCA) is responsible for the management of the canal, and the nature of its exceptionally high biological value applies to the site as a whole, many of the objectives and actions in this plan are relevant to the Surrey length. This plan will be implemented in conjunction with any future Surrey Habitat Action Plan (HAP) for canals or open water.

The aim of this action plan is to enhance canal biodiversity in Hampshire through programmes of action. It is important, however, that nature conservation enhancement is achieved whilst at the same time maintaining a balance with other interests.

## 2 CURRENT STATUS

### 2.1 Description of Habitat

Canals are artificial habitats, which mostly differ from rivers in providing a very slow moving water body, as well as having a regular linear profile, gently curving bed, uniformity of substrate and a relative constancy of water levels. In contrast to other flowing aquatic systems, therefore, canals provide a relatively stable environment for the biota that they support. This stability, as well as habitat longevity and often consistent

management has enabled many canals to support a diverse range of biological assemblages. A general introduction to canal ecology is provided in Hopkins and Brassley<sup>2</sup>.

Canals form important ecological corridors through developed and agricultural landscapes. They enable species to bridge geographical barriers that exist between river systems. The habitat is often a last foothold for many species whose natural wetland and aquatic habitats have diminished or disappeared.

Additional habitats within the canal corridor provide shelter, breeding and feeding sites, for a range of species that utilise canals. These include canal banks, adjacent wetland and aquatic habitats, including off-line sidewaters (flashes), hedgerows, grassland, woodland, and heathland (Basingstoke Canal). This action plan should, therefore, be considered in conjunction with other relevant HAPs.

Physical structures associated with canals such as bridges, locks and sluices provide suitable conditions for an additional range of organisms, particularly lower plants, lichens and invertebrates. Canal tunnels provide important roosting and breeding sites for bats.

Canals support a range of aquatic and marginal plant assemblages, the composition of which are dependent on water chemistry. The canals covered by this action plan are characterised by calcareous, neutral and slightly acidic conditions, resulting from varying geological influences. The Basingstoke Canal's eastwards calcareous to slightly acidic transition, enables it to support an exceptional diversity of aquatic plant assemblages. Calcareous aquatic canal flora in Hampshire comprises species such as water crowfoot *Ranunculus pencillatus* subspecies *pseudofluitans* var. *vertumnus*, starwort *Callitriche obtusangula*, Mares-tail *Hippuris vulgaris*, river water dropwort *Oenanthe fluviatilis*, fool's watercress *Apium nodiflorum* and lesser water-parsnip *Berula erecta*. Characteristic aquatic flora associated with neutral and slightly acidic conditions include, arrowhead *Sagittaria sagittifolia*, broad-leaved pondweed *Potamogeton natans*, water soldier *Stratiodes aloides*, bladderwort, *Utricularia*

*australis* and spiked water-milfoil *Myriophyllum spicatum*.

The botanical diversity of canals enables a rich invertebrate fauna to be supported. The Basingstoke Canal, for instance, supports nationally important populations of Odonata (dragonflies and damselflies), including the Hampshire BAP priority species downy emerald *Cordulia aenia* and brilliant emerald *Somatochlora metallica*.

The Basingstoke Canal also supports a population of the water vole *Arvicola terrestris* (west of the Greywell Tunnel).

The Basingstoke Canal, which forms the majority of the habitat covered by this action plan, is one of the most biologically rich aquatic systems in the UK. A description of the canal's ecology is provided in the Basingstoke Canal Site of Special Scientific Interest (SSSI) citation<sup>3</sup>.

The un-navigable Greywell Tunnel, which forms part of the Basingstoke Canal, provides shelter to one of the largest population of bats of any known site in Britain, including at least 5 hibernating species, and is, therefore, one of Europe's most important winter roosts. Although none of the 5 recorded species are Hampshire BAP priority species, the tunnel provides the potential to support such species. A description of the physical characteristics and ecology of the tunnel is provided in Stebbings<sup>4</sup> and in the 'Greywell Tunnel' SSSI citation<sup>5</sup>.

In addition to its intrinsic ecological value, the Titchfield Canal performs the important function of providing water for a series of scrapes and meres and for the winter inundation of water meadows, on the Titchfield Haven Nature Reserve, as well as providing a drainage function for the Titchfield Village area. The Titchfield canal is unique in that almost all of its original length has been retained, accentuating its historical and archaeological value. A guide to the history of the canal is provided in Davies<sup>6</sup>.

The Romsey Barge Canal is not a stagnant body of water, but is fed by the River Test, with a number of outfalls

A list of National Vegetation Classification (NVC) categories covering the range of canal vegetation communities for canals covered by this plan, is provided in Appendix 2. A fuller description of the communities is given in Rodwell<sup>7</sup>.

## 2.2 Distribution and Extent

Remaining sections of canal in Hampshire include the Basingstoke Canal, the Titchfield Canal, a fragment of the Andover Canal (known locally as the Romsey Barge Canal), and a modified Itchen Navigation. Other small canal fragments also exist. The Itchen Navigation was not a true canal but a series of linked 'cuts', which have been replaced by weirs, resulting in the loss of the distinctive slow moving waters typical of canals. The Itchen Navigation is, therefore, covered by the Chalk Streams HAP.

This plan covers approximately 58km of canal, 27km of which is within Surrey. Although the Hampshire resource constitutes only about 0.5% of the UK total, the Hampshire section of the Basingstoke Canal represents more than 14% of the total extent of Canal SSSI in England.

The main sites in Hampshire are listed below. The Greywell Tunnel, although historically part of the Basingstoke Canal, is described separately due to its unique ecological characteristics.

- The Basingstoke Canal is the only sizeable canal remaining in Hampshire and the only one utilised by boats. The Hampshire length of the canal extends from Greywell Road (Penny Bridge) at SU69485211 to the eastern boundary of Aldershot at SU88685140, on the Hampshire/Surrey border. The Surrey length extends to TQ055618 near Woodham. The total length of the canal is approximately 51 km, of which approximately 24 km is in Hampshire. There are also derelict sections west of the Greywell Tunnel. The several off-line sidewaters (flashes) along the canal are an integral part of the hydrological system and in Hampshire these include Eelmoor, Claycart and Rushmoor Flashes, which are managed by the Hampshire Wildlife Trust.
- The Greywell tunnel, situated close to Greywell village, extends for approximately 1,125m, between SU70805178 and SU71885144.
- The Titchfield Canal extends for just over 4 km, from SU54350660, at Stoney Bridge near Titchfield village, to SU53170271, at the restored sea lock; over 90% of the length of the original canal survives. Through recent land acquisition, Hampshire County Council now owns a significant proportion of the canal, as part of its Titchfield Haven landholding, with the remainder in private ownership.
- The Romsey Barge Canal, situated north of Romsey, extends for approximately 3 km from SU35152363 at the A3057, to

SU35832132 in a residential area of the town. A further fragment exists to the north of this section.

### 2.3 Legislation and Site Designation

- Most of the Basingstoke Canal is a SSSI.
- The Greywell Tunnel is a separate SSSI, notified for its large bat populations.
- A small proportion of the Titchfield Canal is within the boundary of the 'Titchfield Haven' SSSI/National Nature Reserve (NNR) and the 'Solent and Southampton Water' Special Protection Area (SPA), with a further section adjacent to the designated sites. The canal helps to maintain the wetland areas that support important bird populations.
- Approximately two thirds of the Romsey Barge Canal (the 'rural' section) is within the boundary of the 'River Test' SSSI.
- Canal sections not covered by statutory designation are under review for potential selection as Sites of Importance for Nature Conservation (SINC).
- Cut grass *Leersia oryzoides*, which occurs on the Surrey section of the Basingstoke Canal, is listed in Schedule 8 of the Wildlife and Countryside Act 1981 (as amended) (W&CA) and is a Hampshire BAP priority species. The water vole, which occurs on the Basingstoke Canal, west of the Greywell Tunnel, is listed in Schedule 5 (section 9(4) only) and is also a Hampshire BAP priority species.
- The Environment Act 1995 places a statutory responsibility on the Environment Agency (EA) to further nature conservation, wherever possible, when carrying out its water management functions.
- The Habitat Regulations highlight the importance of linear and continuous structures as corridors for the migration, dispersal and genetic exchange of wild species. As such, their protection and management is encouraged. This is also recognised in DoE Planning Policy Guidance 9: Nature Conservation (PPG9).

## 3 CURRENT FACTORS AFFECTING THE HABITAT

- Pollution  
A number of factors commonly affect canal habitat, which include agricultural and road run-off, discharges from adjacent development and boats, and turbidity.

Contamination principally from agricultural and road run-off is a factor on the Basingstoke Canal and turbidity has increased over the past 15 years. Agricultural run-off, and discharges from roads and adjacent development may be a significant factor on the Romsey Barge Canal.

- Water levels/flow  
Ground and surface water abstraction affects water supplies to all canal sections. This is a particular problem on the Basingstoke Canal, and a back-pumping scheme has been implemented on the Woodham section. New development may have further significant effects on water supplies and these need to be carefully assessed and monitored. Flow velocity is relatively high on some shallow sections of the Titchfield and Romsey Barge Canals, although the overall effect of insufficient dredging is that total flow rate has reduced and this has exacerbated flooding problems in the Titchfield area.

- Recreational pressure  
Boat numbers and speeds, intensity of angling and recreational use of the towpath are monitored on the Basingstoke Canal, by the BCA and addressed through the SSSI Management Plan, in order to limit bank erosion and turbidity. It should be noted that an appropriate number of boat journeys along the canal can help to maintain an open channel both in terms of siltation and floating weed cover. The southern end of the Romsey Barge Canal is subject to considerable recreational pressure from adjoining residential areas and Test Valley Borough Council is proposing to construct a cycleway along its towpath.

- Invasive/inappropriate species  
Invasive species such as Australian swamp stonecrop *Crassula helmsii*, floating pennywort *Hydrocotyle ranunculoides*, the presence of signal crayfish and mink, and inappropriate species of fish such as carp and bream, are problems on the Basingstoke canal. Increasing tree shading on the Basingstoke Canal is having the most significant detrimental effect on canal biota.

- Inappropriate management work  
This is not currently a problem on the Basingstoke and Titchfield Canals. Management work on the Basingstoke Canal is planned through the SSSI management plan and associated work programme. Management works on the Titchfield canal is planned through the EA's Titchfield Water Level Management Plan. The northern section of the Romsey Barge Canal suffers from overgrazing of canal bank vegetation.

**HABITAT  
ACTION  
PLAN**

- Lack of management/resources  
Lack of management and resources has resulted in a reduction in channel width and depth due to silting and vegetation encroachment, on sections of the Titchfield and Romsey Barge Canals. The level of tree shading along the Basingstoke Canal is having an extremely detrimental impact on aquatic biota and has led to a significant decline in nature conservation value. This is now being addressed through a BCA strategy to reduce tree shading.
- Major structural/physical changes  
No major restoration or structural projects are currently planned for the canals covered by this plan. The environmental impact of the Basingstoke Canal Woodham back-pumping scheme is currently being assessed. Future restoration or structural proposals should be fully assessed for their likely/potential environmental impacts.

## 4 CURRENT ACTION

### 4.1 Site and Species Protection

- Legislation and designations relevant to canals are discussed in Section 2.3.
- Part of the Titchfield Canal is within the Solent and Southampton Water SPA. Under The Conservation (Natural Habitats &c.) Regulations 1994 (Habitat Regulations), the EA has particular responsibilities for SPAs (part of the Natura 2000 network). A review of all existing authorisations (e.g. discharge consents, water abstraction licences) and activities (e.g. flood defence works) potentially affecting these sites is currently underway, using a methodology agreed with English Nature (EN). Any application for new authorisations, activities or development potentially affecting SPAs will have to take account of the requirements of the Habitat Regulations.
- EN have produced lists of potentially damaging operations (PDOs) for SSSIs, and require landowners and occupiers to liaise with them on management practice.
- The W&CA affords full protection to cut grass *L. oryzoides*, and limited protection to the water vole.
- Under the Environment Act 1995, the EA has a statutory duty to actively encourage and progress nature conservation when carrying out water management functions, and have regard to nature conservation when carrying out pollution prevention and control functions. Furthermore, as a regulator, the

EA screens and appraises all applications for discharge consents and abstraction licences for their potential impact on nature conservation interests. The EA also has a specific duty to liaise with EN with respect to the conservation of water dependent SSSIs.

- The nature conservation interests of statutory (e.g. SSSI/SPA) and non-statutory (SINC) designated sites, as well as non-designated habitat are protected through Hampshire County Structure Plan and Local Plan policies.

### 4.2 Habitat Management and Programmes of Action

The environmental quality of canals should be maintained and enhanced, through the implementation of long-term management plans. Properly planned management is essential to maintain or enhance the ecological value of canals, as unlike rivers, canals become silted and develop into wetland and then terrestrial habitat, over time. It is important that recreational, historical, archaeological and landscape value is fully considered when planning the nature conservation management of canals and that the management planning process resolves potential conflicts between the various interests.

- Local Environment Agency Plans (LEAPs) have been produced for all river catchments in Hampshire. These plans cover the full range of activities covered by the EA, including enhancement of biodiversity.
- Management of the Basingstoke Canal is carried out by the BCA and follows the recommendations of the Basingstoke Canal SSSI Management Plan<sup>8</sup>. This work includes dredging, maintenance of the canal bank and ancillary structures, management of bank, towpath and channel vegetation, canal side trees, and fisheries. Management issues are reviewed on a twice yearly basis by the Basingstoke Canal Conservation Working Party, which comprises representatives from the BCA, EN, Hampshire and Surrey County Councils, Hampshire and Surrey Wildlife Trusts, EA, Surrey and Hampshire Canal Society, Inland Waterways Association, Liverpool University and the Basingstoke Canal Angling Association.

The derelict sections of the Basingstoke Canal, to the west of the Greywell Tunnel, are currently unmanaged. There is a need for these to be appropriately managed, particularly as they support water voles.

- No habitat management is presently carried out in the Greywell Tunnel, other than

essential safety maintenance work on its two entrances.

- Water Level Management Plans (WLMPs) have been produced by the EA for the River Test, which covers the Romsey Barge Canal, and Titchfield, which covers the Titchfield Canal.
- The Titchfield WLMP<sup>9</sup> includes a description of the Titchfield Canal's control structures, with site objectives, operational procedures, programme of implementation, and monitoring. Dredging, vegetation clearance, and amenity works have been carried out by the EA, Hampshire County Council, Fareham Countryside Service, Titchfield Village Trust, and Titchfield History Society. There is a need for a overall management plan for the canal to properly plan its nature conservation enhancement, which at the same time takes into consideration the historical, archaeological, landscape and recreational aspects of this important waterway.
- Current management of the Romsey Barge Canal by the EA is planned through the River Test WLMP<sup>10</sup>. There is a similar need for an overall management plan for this canal.

#### 4.3 Action for Species

Table 1 (Appendix 1) lists those Hampshire priority species that occur in/on canals. Although action in this HAP may contribute to the conservation of these species, none of the priority species are found principally in/on canals, other HAPs having key responsibility for their conservation.

- A list of Surrey BAP priority species associated with the Surrey length of the Basingstoke Canal is yet to be produced.
- Liverpool University's analysis of botanical and Odonata data for the Basingstoke Canal (refer to section 4.4) has identified trends in species composition and community structure on the canal, over a number of years. The findings of the analysis will lead to a refinement of the recommendations and work programme of the SSSI Management Plan, particularly in relation to priority species. The study identified that tree shading is having the most significant impact on the biological value of the canal.
- Cut grass *L. oryzoides*, which is the subject of a UK Species Action Plan (SAP)<sup>11</sup>, occurs on the Surrey length of the Basingstoke Canal. This has recently been surveyed by the BCA and a management

plan has been prepared to address its conservation. A source of propagated, local provenance plants is kept at the Chelsea Physic Garden, and this will be used to reinforce the current colony.

- Water voles, which are found on the Hampshire length of the Basingstoke Canal and formally on the Surrey length are the subject of a Hampshire SAP<sup>12</sup>.
- The BCA are carrying out a programme of mink trapping on the Basingstoke Canal with support from the Surrey Mammal Project and the EA, in order to enhance native mammal populations. Signal crayfish, which cause damage to canal banks through burrowing, are also being trapped and removed from the canal.
- In line with the Basingstoke Canal SSSI Management Plan, the BCA is:
  - working with the Basingstoke Canal Angling Association to modify the species composition of fish stocks in the canal, to reduce impacts on aquatic biota, principally Odonata,
  - regulating boat numbers and speeds to limit adverse impacts on marginal vegetation,
  - developing a strategy to reduce tree shading, which is having a significant detrimental impact on canal vegetation, most Odonata species and fish distribution,
  - developing a strategy to target the conservation of Hampshire BAP priority species and other species of conservation concern.

#### 4.4 Survey, Research and Monitoring

- Surveys of otter and water vole populations have been carried out by the EA in and around all of the remaining canal sections (both species are Hampshire and Surrey BAP priority species).
- The EA monitors canal water quality at a limited number of canal monitoring stations. There is a need for the number and position of these stations, and the monitoring method used, to be reviewed.
- The Basingstoke Canal is the most researched canal in the UK for its flora and fauna. Annual surveys of flora and Odonata were carried out between 1986 and 1998, and 1989 and 1998, respectively. A consistent methodology was used in gathering botanical data, which included information on species richness and vegetation structure. Botanical and Odonata data also exists from earlier surveys. A comprehensive analysis of compiled

**HABITAT  
ACTION  
PLAN**

botanical and Odonata data was carried out by Liverpool University in 1999<sup>13</sup>, to quantify changes in vegetation structure and composition and Odonata populations, and to correlate these changes with previous management work and recorded environmental factors (where data was available). Conclusions from this study will be related to the SSSI management plan recommendations and work programme. As part of this study, a review of the previous vegetation and Odonata surveillance schemes was carried out to identify more systematic, standardised and cost effective schemes for the future monitoring of canal biota and these will be developed. A number of other biological groups, including various invertebrate taxa, birds and fish have been surveyed. Up-to-date surveys are required for aquatic invertebrates and micro-organisms. Tree shading along the canal has been surveyed by the BCA in order to develop a shade reduction and monitoring strategy.

- Surveys since the 1970s have confirmed the Greywell Tunnel to be one of the largest winter bat roosts in Britain. The internal environment of the tunnel has also been surveyed. Bat populations were surveyed and subsequently monitored by EN but this has temporarily ceased due to health and safety issues. A survey of the structural condition of the tunnel has recently been undertaken and bat monitoring is due to recommence.
- The vegetation of much of the Titchfield Canal has been briefly surveyed, using NVC description, as part of recent botanical surveys of Hampshire County Council's Titchfield Haven landholding. There is anecdotal evidence that the canal supports a good range of Odonata species. There is a need for the canal to be appropriately surveyed to assess its biological value.
- Little is known about the biological value of the Romsey Barge Canal. There is a need, therefore, for the canal to be appropriately surveyed to assess its biological value.

## 5 OBJECTIVES

The overall aim of this Plan is to protect and enhance the biodiversity of canals in Hampshire and on the Surrey section of the Basingstoke Canal. This broad aim translates into the specific objectives set out below. The 'Proposed Action' table in section 6 identifies the actions to be taken to meet these objectives.

	OBJECTIVE	PROPOSED ACTIONS
A	Protect and maintain the characteristic habitats and associated species of canals covered by this plan.	1-8, 14, 16, 19, 22, 24, 31, 32, 37
B	Enhance the ecological value of canal habitat covered by this plan, through favourable management.	5, 6, 8-24, 33, 35, 36, 40
C	Ensure that the requirements of BAP Priority Species are met.	5, 19-21, 25-30, 36
D	Improve knowledge of canal habitat and associated species through survey, research and monitoring.	5, 31-35, 38-42
E	Promote the importance of canal habitat, its associated species and the threats to them. Communicate with and provide information to key sectors, including landowners, local authorities, recreational users, schools, community groups and members of the public.	5, 43-47

**HABITAT  
ACTION  
PLAN**

## 6 PROPOSED ACTION

The following table lists the actions required to achieve the objectives set out in this Plan. Each action has been assigned to one or more 'Key Partners'. Key Partners are those organisations that are expected to take responsibility for the delivery of the actions assigned to them, according to the targets set in this Plan. Other organisations may also be involved in the delivery of actions, and they have been indicated in the 'Others' column of the table.

Key to symbols in Action Table:

- ◆ To be completed by the indicated year. Work can commence at any time before the due date, at the discretion of the Key Partner.
- ◆⇨ Design or production of a plan/strategy to be completed by this year and then followed by its implementation.
- To start by the indicated year and usually followed by ongoing work. A start arrow in year 2000 can indicate a new action or a new impetus to existing work.
- ⇨ Work that has already begun and is ongoing.

	ACTION	DELIVERY BY		YEAR						MEETS OBJ.
		Key Partner	Others	2000	2001	2002	2003	2004	2010	
				◆ = complete by    ◆⇨ = design by and implement ➤ = start by    ⇨ = ongoing						
<b>Habitat Protection</b>										
1	Review the selection of SSSIs, to ensure that all relevant canal habitat and important associated habitats are designated.	EN	HCC, HWT	⇨	⇨	⇨	⇨	⇨	⇨	A
2	Review SINC selection criteria and ensure that relevant canal habitat and important associated habitats are identified and selected.	HCC	HWT, EN, DCs			◆				A
3	Ensure that the nature conservation interests of canals are protected from abstraction, discharge and development proposals, either individually or in combination, through forward planning and development control.	EA, HCC, LAs		⇨	⇨	⇨	⇨	⇨	⇨	A
4	Fully assess the ecological implications of any canal restoration/maintenance project.	BCA, EA	HCC, DCs	⇨	⇨	⇨	⇨	⇨	⇨	A
5	Implement the future Surrey Canal or Open Water HAP in conjunction with this plan.	SBP			◆⇨					A B C D E
6	Protect the Greywell Tunnel from unauthorised human disturbance by maintaining barriers at openings.	HCC		⇨	⇨	⇨	⇨	⇨	⇨	A B

**HABITAT  
ACTION  
PLAN**

Canals

7	Maintain the physical structure of canals (including the Greywell Tunnel) covered by this plan.	EA, BCA, HCC	TVT, THS	⇔	⇔	⇔	⇔	⇔	⇔	A
<b>Habitat Management, Incentive Schemes and Other Resources</b>										
8	Maintain canal water levels and flows within optimal ranges.	EA, BCA	HCC, TVT, EN	⇔	⇔	⇔	⇔	⇔	⇔	A B
9	Ensure the favourable management of the Basingstoke Canal through the implementation of the Basingstoke Canal SSSI Management Plan.	BCA	BCCWP	⇔	⇔	⇔	⇔	⇔	⇔	B
10	Ensure that conclusions from the 'analysis of Basingstoke Canal data' are related to the SSSI Management Plan at its next review.	BCCWP						◆		B
11	Translate the recommendations of the Basingstoke Canal Management Plan into specific objectives.	BCCWP						◆⇔		B
12	Ensure the favourable management of sidewaters associated with the Basingstoke Canal.	HWT	BCA	⇔	⇔	⇔	⇔	⇔	⇔	B
13	Produce and implement a strategy for reducing tree shading along the Basingstoke Canal.	BCA	BCCWP	◆⇔						B
14	Ensure the favourable management of the derelict sections of the Basingstoke Canal, west of the Greywell Tunnel, through the production and implementation of a scheme of management.	HCC	BCA, EA			◆⇔				A B
15	Ensure the favourable management of the Titchfield Canal through the production and implementation of a canal management plan (to integrate with the Titchfield Haven Management Plan and the Titchfield WLMP), which also addresses historical, archaeological, landscape and recreational issues.	HCC, EA, FBC	TVT, THS, EN, LOs				◆⇔			B
16	Investigate the potential of introducing water flow to the southern-end of the Titchfield Canal, between the sea lock and main sluice.	EA, HCC	EN, TVT, THS			◆				A B
17	Ensure the favourable management of the Romsey Barge Canal through the production and implementation of a canal management plan (to integrate with the Test and Itchen LEAP and the River Test WLMP).	EN, EA, TVBC	LOs				◆⇔			B
18	Ensure the favourable management of further viable canal fragments.	EA		⇔	⇔	⇔	⇔	⇔	⇔	B
19	Obtain funding for all projects associated with canal habitat enhancement not covered by existing budgets.	BCA, EA, HCC, TVBC	EN, TVT, THS, FBC	⇔	⇔	⇔	⇔	⇔	⇔	A B C

**HABITAT  
ACTION  
PLAN**

	ACTION	DELIVERY BY		YEAR						MEETS OBJ.
		Key Partner	Others	2000	2001	2002	2003	2004	2010	
20	Incorporate HAP, WLMP and LEAP actions/targets in canal management plans/programmes.	BCA, EA, HCC, TVBC	EN, TVT, THS, FBC				◆⇄			B C
21	Incorporate HAP objectives and targets within LEAPs and WLMPs.	EA			◆⇄					B C
22	Implement WLMPs and LEAPs relevant to this plan.	EA		⇄	⇄	⇄	⇄	⇄	⇄	A B
23	Promote favourable management of important adjacent habitats	FWAG, MAFF	HWT, LOs	⇄	⇄	⇄	⇄	⇄	⇄	B
24	Ensure that management of adjacent land does not adversely affect canal habitat.	EA, FWAG, FRCA	BCA, LOs	⇄	⇄	⇄	⇄	⇄	⇄	A B
<b>Species Action</b>										
25	Review the distribution of Hampshire BAP Priority species and other species of conservation concern associated with canal habitat and develop a strategy for the natural recovery of such species where they have suffered steep decline.	BCA, HCC, TVBC	EN, EA, FBC			◆⇄				C
26	Take into consideration the habitat requirements of Hampshire BAP Priority Species, when planning and implementing the management of canal habitat.	BCA, HCC, TVBC	EN, EA		◆⇄					C
27	Consolidate the cut grass colony on the Surrey section of the Basingstoke Canal using propagated local provenance stock from the Chelsea Physic garden.	SFC	BCCWP		◆					C
28	Enhance water vole populations on the Basingstoke Canal through the implementation of a programme of mink trapping and habitat enhancement.	BCA	EA, MAFF	◆⇄						C
29	Produce and implement a plan to eradicate or, where not possible, control invasive/alien species.	EA, BCA	MAFF		◆⇄					C
30	Prepare Species Action Plans for species associated with canals that are not adequately covered by this plan or others, as identified in Appendix 1.	HBP	HCC, HWT, EN		◆					C
<b>Survey, Research and Monitoring</b>										
31	Map the extent of canal habitat.	HCC	HAPWG			◆				A D
32	Monitor canal extent from aerial photographs and surveys.	BCA, FBC, TVBC, HCC				➔				A D

Canals

33	Ensure the appropriate monitoring of canal water quality and levels through the setting of monitoring objectives and targets and by reviewing the number and position of monitoring stations.	EA	BCCWP, HCC		◆⇄						B D
34	Commission appropriate biological surveys for important groups/species on the Basingstoke Canal, not adequately covered.	BCA	BCCWP		◆⇄						D
35	Develop appropriate biological and environmental monitoring schemes for the Basingstoke Canal.	BCCWP	EN, EA		◆⇄						B D
36	Incorporate a shading monitoring scheme for the Basingstoke Canal into the general monitoring programme.	BCA	BCCWP		◆⇄						B C
37	Survey the structural integrity of the Greywell Tunnel.	HCC, EN		◆							A
38	Recommence the monitoring of bat populations in the Greywell Tunnel.	EN			▶						D
39	Commission appropriate biological surveys for important groups/species for the Romsey and Titchfield Canals.	HCC	TVBC, FBC			◆⇄					D
40	Develop appropriate biological monitoring schemes for the Titchfield and Romsey Canals through the management planning process.	HCC, TVBC	EN, EA, FBC				◆⇄				B D
41	Ensure that all relevant biological data is incorporated into the Hampshire Biological Record.	HCC	BCCWP	⇄	⇄	⇄	⇄	⇄	⇄	⇄	D
42	Promote research into canal ecology, conservation and management.	BCA, EN	HCC, SHCS, IWA	⇄	⇄	⇄	⇄	⇄	⇄	⇄	D
<b>Communication and Publicity</b>											
43	Support actions identified in the Education and Awareness Action Plan relevant to canals.	ALL			▶						E
44	Provide best practice advice on canal habitat management.	BCA	HAPWG, SHCS, IWA	⇄	⇄	⇄	⇄	⇄	⇄	⇄	E
45	Involve local communities in the conservation of canal habitat.	BCA BTCV HWT	HCC, FBC, TVBC, IWA, SHCS	⇄	⇄	⇄	⇄	⇄	⇄	⇄	E
46	Continue to promote the Basingstoke Canal and Greywell Tunnel, through publicity information and teaching material, and through the use of the Basingstoke Canal Centre.	BCA	SHCS, IWA	⇄	⇄	⇄	⇄	⇄	⇄	⇄	E
<b>ACTION</b>		<b>DELIVERY BY</b>		<b>YEAR</b>						<b>MEETS OBJ.</b>	
				◆ = complete by    ◆⇄ = design by and implement							

**HABITAT  
ACTION  
PLAN**

				➡ = start by ⇄ = ongoing						
		Key Partner	Others	2000	2001	2002	2003	2004	2010	
47	Increase awareness of the Titchfield and Romsey Canals through the production of publicity/interpretation material.	HCC, FBC, TVBC	TVT, THS				◆			E

**KEY TO ORGANISATIONS**

BCA	Basingstoke Canal Authority	HWT	Hampshire Wildlife Trust
BCCWP	Basingstoke Canal Conservation Working Party	IWA	Inland Waterways Association
BTCV	British Trust for Conservation Volunteers	LAs	Local Authorities (HCC/DCs)
DCs	District Councils	LOs	Landowners
EA	Environment Agency	MAFF	Ministry of Agriculture, Fisheries and Food
EN	English Nature	SBP	Surrey Biodiversity Partnership
FBC	Fareham Borough Council	SFC	Surrey Flora Committee
FWAG	Farming and Wildlife Advisory Group	SHCS	Surrey & Hampshire Canal Society
HAPWG	Habitat Action Plan Working Group	TVBC	Test Valley Borough Council
HBP	Hampshire Biodiversity Partnership	THS	Titchfield History Society
HCC	Hampshire County Council	TVT	Titchfield Village Trust



## APPENDIX 1

Table 1 – Priority Species, found primarily in other habitats which occur in/on canals

Scientific name	Common name	Group	Primary HAP	Hants SAP?
<i>Donacia bicolora</i>	a reed beetle	Beetles	Rivers and streams	no
<i>Cordulia aenea</i>	downy emerald	Dragonflies	Open standing water	no
<i>Somatochlora metallica</i>	brilliant emerald	Dragonflies	Open standing water	no
<i>Leersia oryzoides</i>	cut grass	Flw Plants	Rivers and streams	no
<i>Oenanthe fluviatilis</i>	river water-dropwort	Flw Plants	Chalk rivers	no
<i>Potamogeton trichoides</i>	hair-like pondweed	Flw Plants	Open standing water	no
<i>Ranunculus penicillatus</i>	stream-water crowfoot	Flw Plants	Chalk rivers	no
<i>Arvicola terrestris</i>	water vole	Mammals	Chalk rivers	yes
<i>Pisidium tenuilineatum</i>	fine-lined pea mussel	Molluscs	Chalk rivers	no
<i>Pseudanodonta complanata</i>	depressed river mussel	Molluscs	Chalk rivers	no
<i>Xanthorhoe biriviata</i>	balsam carpet	Moths	Wet grassland, fen meadow, floodplain grazing marsh	no

**HABITAT  
ACTION  
PLAN**

## APPENDIX 2

National Vegetation Classification (NVC) categories covering the range of canal vegetation communities covered by this plan.

The distribution of these communities would need to be confirmed by appropriate survey/analysis of existing data.

Aquatic communities:

- A1 *Lemna gibba* community
- A2 *Lemna minor* community.
- A3 *Spirodela polyrhiza*-*Hydrocharis morsus-ranae* community.
- A5 *Ceratophyllum demersum* community.
- A8 *Nuphar lutea* community.
- A9 *Potamogeton natans* community.
- A10 *Polygonum amphibium* community.
- A11 *Potamogeton pectinatus*-*Myriophyllum spicatum* community.
- A12 *Potamogeton pectinatus* community.
- A15 *Elodea canadensis* community.
- A16 *Callitriche stagnalis* community.
- A20 *Ranunculus peltatus* community.

Swamp communities:

- S4-S8, S9, S12, S14-S18, S22, S23, S25, S26, S28.

## REFERENCES

HABITAT  
ACTION  
PLAN

1. ***Biodiversity: The UK Steering Group Report, Volume 2: Action Plans***, HMSO, 1995.
2. ***Wildlife of Rivers and Canals***, T Hopkins and P Brassley, Moorland Publishing, 1982.
3. ***Basingstoke Canal Site of Special Scientific Interest, Hampshire/Surrey***, English Nature 1994.
4. ***The Greywell Tunnel. An Internationally Important Haven for Bats***, R E Stebbings, English Nature, 1993.
5. ***Greywell Tunnel (Basingstoke Canal) SSSI***, English Nature, 1985.
6. ***Titchfield's Canal. The Maritime Heritage of Titchfield and Britain's Second Oldest Man Made Waterway***, Davies K, CPC Publications, 1998.
7. ***British Plant Communities, Vol. 4, Aquatic Communities, Swamps and Tall-Herb Fens***,  
J S Rodwell (ed), Cambridge University Press, 1995.
8. ***Basingstoke Canal Site of Special Scientific Interest Management Plan***, J W Eaton and J R Pygott, Hampshire County Council, Surrey County Council and English Nature, 1995.
9. ***Titchfield Water Level Management Plan***, Environment Agency, 1998.
10. ***River Test Water Level Management Plan***, Environment Agency, 2000
11. ***Cut Grass (Leersia oryzoides) Action Plan, Tranche 2 action Plans, Vol. 1 - Vertebrates and Vascular Plants***, UK Biodiversity Group, 1998.
12. Species Action Plan: Water Vole, in ***Biodiversity Action Plan for Hampshire: Volume Two***, Hampshire Biodiversity Partnership, Hampshire County Council, 2000.
13. ***The Basingstoke Canal SSSI: Analysis of 1988-1998 Ecological Data and Recommendations for Future Management and Monitoring***, C S James and J W Eaton University of Liverpool, 1999.

This Plan is one of many Habitat, Species and Topic Action Plans being prepared by the Hampshire Biodiversity Partnership. It will be monitored by the Partnership and fully reviewed and updated in 2004.

This habitat action plan has been prepared by Garry King and the Canals HAP Working Group on behalf of the Hampshire Biodiversity Partnership.

For further information contact: Garry King, Hampshire County Council, Tel: 01962 845148.