

Operating Agreement December 2002

Wessex Water Services Limited and the Environment Agency

RESTORATION OF RIVER FLOWS IN THE RIVER WYLYE,  
RIVER PIDDLE AND UPPER BRISTOL AVON

OPERATING AGREEMENT

This document sets out the terms of arrangements to progress the restoration of river flows in the River Wylde, River Piddle and Upper Bristol Avon through the operation of sourceworks for public water supply and stream support for improving river flows made between:-

1. Wessex Water Services Limited of Claverton Down Road, Claverton Down, Bath BA2 7WW ("Wessex Water") and
2. The Environment Agency of Manley House, Kestrel Way, Exeter, Devon, EX2 7LQ ("the Agency")

under Section 20 of the Water Resources Act 1991 and as amended by the Environment Act 1995 Schedule 22.

WHEREAS:-

- (1) Wessex Water is the owner and operator of water sources (hereinafter called "the Sources") which were constructed and operated by virtue of the statutory provisions and licences and which are more properly described in Schedule 1 to this Agreement
- (2) The Agency has the duty by virtue of Section 6(2) of the Environment Act 1995 to take all such actions as it may from time to time consider, necessary or expedient for the purpose of conserving, redistributing or otherwise augmenting water resources and of securing the proper use of water resources subject to the limitations set out in Section 6 of that Act
- (3) Wessex Water has a licence issued by the Secretary of State under the provisions of Section 6 of the Water Industry Act 1991 to supply water within its area

NOW THEREFORE IT IS HEREBY AGREED as follows:-

1. WESSEX Water shall operate the Sources in accordance with the management rules set out in Schedule 2 to this Agreement
2. WESSEX Water shall keep such records and provide such information relative to the operation of the Sources as the Agency shall from time to time reasonably require.
3. EITHER party may give notice to the other calling for a review of the management rules contained in Schedule 2. Either party may seek to amend Schedule 1 in respect of descriptions and administrative changes to authorisations. Either party may give notice to the other calling for a review of the operation of the Sources or any part of it referred to in Schedule 1 to this Agreement and the duties required of Wessex Water in Schedule 2. If either party requests a review, the parties will meet with a view to attempting to agree on how the review will take place. Any Notice given under this Clause requesting a review shall be given not less than one year prior to 1 April from which any change resulting from the review will be brought into effect unless the Agency and Wessex Water agree otherwise. Specific reviews of designated activities in Schedule 2 may be agreed and undertaken irrespective of the review process in this clause

4. WESSEX Water shall notify the Agency before varying the management of any land held in connection with the Sources if that variation involves any matter which is the subject of this Agreement
5. IN the case that Wessex Water seeks to dispose of the whole or any part of the Sources if the Agency so requires it shall make it a condition of any disposal that the person receiving the assets shall enter into a binding contract with the Agency to the same intent as this Agreement mutatis mutandis
6. ANY dispute as to the terms of this Agreement shall be referred to and determined by the Secretary of State who shall consult the Director General of Water Services where appropriate
7. THIS document shall not impose on arrangements in the Wimbleball Operational Management Strategy Operating Agreement or its successor Agreements relating to the Wimbleball Reservoir Source owned by South West Water Limited but also used by Wessex Water as a source of supply
8. This agreement will cease on 31 March 2007.

## Contents

Section	Description	Page
	Contents	4
	Amendment Record	5

### SCHEDULE 1 - DESCRIPTION OF SOURCES

1.1	The sources	6
Table 1a	Public Water Supply sources	6
Table 1b	Stream Support Sources	6-7
Table 1c	Bulk Supply Arrangements	7
Map 1	Map of Sources	7

### SCHEDULE 2 - MANAGEMENT RULES

Section	Description	Page
1	Introduction	9
2	Use of Chitterne, Alton Pancras and Cowbridge for Public Water Supply	10
2.1	General Principles	10
2.2	Chitterne Public Water Supply Operating Rules	10
2.3	Alton Pancras Public Water Supply Operating Rules	11
2.4	Cowbridge Public Water Supply Operating Rules	12
2.5	Operating Public Water Supply During Dry Periods	12-13
Drought graph	Wessex Water Water Conservation Rule Storage	14
3	Stream support operating rules	15
3.1	Chitterne Brook Stream Support Operating Rules	15
3.2	River Piddle (Upper Section) Stream Support Operating Rules	17
3.3	Upper Bristol Avon Stream Support Operating Rules	18-20
4	Liaison and reporting arrangements and Data Provision/Exchange	21
4.1	Liaison Arrangements	21
4.2	Provision and Exchange of Data	21
4.3	Annual Reporting	21
4.4	Environmental Monitoring Programme	22
	Signature Sheet	23

### APPENDICES

Appendix 1	List of Other Public Water Supply Sources	24-27
Appendix 2	Overall Timetable	28-32
Appendix 3	Extraordinary Arrangements	33
Appendix 4	Liaison Contact Arrangements	34
Appendix 5	Provision and Exchange of Data	35
Appendix 6	Environmental Monitoring Programme	36-40



## SCHEDULE 1 - DESCRIPTION OF SOURCES

### 1.1 The Sources

This agreement covers the operation of all of Wessex Water's sources to minimise the abstraction at Chitterne, Alton Pancras and Cowbridge and to provide stream support. It covers the detailed operation of the 11 sources/transfers listed in Table 1 below and it may affect the operation of other sources listed in Appendix 1 of this schedule.

**TABLE 1 - LIST OF THE SITES AND AUTHORISATIONS**

1a - Public Water Supply sources

SOURCE NAME	NGR	PUBLIC WATER SUPPLY OR STREAM SUPPORT	ABSTRACTION LICENCE NUMBER	SUMMARY OF RULES IN SCHEDULE 2
Cowbridge	ST 9888	Public water supply	17/53/001/G/410	Output to be reduced
Chitterne*	ST 9848	Public water supply	13/43/023/G/212	Output to be reduced
Alton Pancras	ST 7808	Public water supply	13/44/041/G/005	Output to be reduced, up to 2.0 Ml/d used for stream support in 2002 / 2003.

\*Codford public water supply groundwater source on the same licence.

1b - Stream Support Sources

SOURCE NAME	NGR	PUBLIC WATER SUPPLY OR STREAM SUPPORT	ABSTRACTION LICENCE NUMBER	SUMMARY OF RULES IN SCHEDULE 2
Luckington	ST 8888	Stream support	17/53/001/G/410	Output to be increased
Tetbury	ST 9898	Stream support	17/53/001/G/410	Output to be increased
Stanbridge	ST 8888	Stream support	17/53/001/G/410	Output to be increased
Cowbridge	ST 9888	Stream support	17/53/001/G/410	Output to be ceased
Park Road	ST 9888	Stream Support	17/53/001/G/410	Output to be ceased
Chitterne stream support	ST 9848	Stream support	Section 32 consents required for continuing this groundwater investigation. If successful, licence application will be required for permanent use	Stream support to be continued using modified rules
Alton Pancras	ST 7808 or nearby sites.	Stream support	Section 32 consents required for this groundwater investigation. New licence required or variation to Licence 13/43/022/G/098	Trials of borehole use to be continued. Up to 4.5 Ml/d post 2004 subject to outcome of current investigation and any authorisations granted.

1b – Stream Support Sources continued...

SOURCE NAME	NGR	PUBLIC WATER SUPPLY OR STREAM SUPPORT	ABSTRACTION LICENCE NUMBER	SUMMARY OF RULES IN SCHEDULE 2
White Lackington / West Lodge	SY 7998 SY 7998	Stream support	Section 32 consents required for continuing this groundwater investigation. If successful, licence application will be required for permanent use	Trial in 2002 / 2003 if stream support from Alton Pancras is unsuccessful
New borehole in Piddlehinton area		Stream support	Section 32 consents required for this groundwater investigation. If successful, licence application will be required for permanent use	Borehole to be consented, drilled, tested and if successful licence application applied for. Once authorised would be used for stream support from 2003 onwards.

1c – Bulk Supply Arrangements

SOURCE NAME	PUBLIC WATER SUPPLY OR STREAM SUPPORT	DESCRIPTION	SUMMARY OF RULES IN SCHEDULE 2
Existing Bristol bulk supply	Public water supply	Wessex / Bristol agreement	Maximise use before making abstractions from Chitterne, Cowbridge and Alton Pancras
Enhanced Bristol bulk supply	Public water supply	Additional Wessex / Bristol agreement required	Maximise use before making abstractions from Chitterne, Cowbridge and Alton Pancras

A list of the other public water supply sources is given in Appendix 1 and the distribution of all sources in the water resource zones is shown on Map 1 overleaf.

Map 1 will go here.



## **SCHEDULE 2 - MANAGEMENT RULES**

### **1 Introduction**

The names of the public water supply and stream support sources used are as described in Schedule 1.

To restore river flows in the River Wylde, River Piddle and Upper Bristol Avon through stream support and reductions in abstraction at Chitterne, Alton Pancras and Cowbridge it has been agreed that Wessex Water will, subject the detailed management rules in this schedule:

1. Maximise the use of their existing 11.3 Ml/d bulk supply from Bristol Water if necessary;
2. Take an extra bulk supply, estimated at between 1.8 Ml/d and 3 Ml/d, from Bristol Water if necessary;
3. In accordance with their Drought Contingency Plan, take appropriate action in severe drought conditions to conserve resources and investigate how these actions impact on river flows;
4. Follow best practice leakage control measures to reach their economic level of leakage during 2002/03 and maintain leakage at the economic level;
5. Continue to pursue actively economic demand management measures in order to achieve best practice for an area where water resources are limited;
6. Use an operating agreement to formalise arrangements;
7. Pursue a variation in their existing abstraction licence to take an additional 3 Ml/d from Wimbleball reservoir during winter months within existing treatment capacity and infrastructure constraints;
8. Mitigate any continuing impacts using stream support.

This operating agreement (point 6 above) seeks to:

- Identify how Wessex Water will translate full use of the existing Bristol supply, and any additional water Bristol make available (points 1 and 2) and the optimal use of all other sources, into reduced output from Cowbridge, Chitterne and Alton Pancras.
- 
- Identify the trigger flows, target flows and augmentation rates for the use of the stream support to help maintain acceptable flows in the rivers (point 8).
- Summarise monitoring and reporting arrangements.

The indicative timetable is set out in Appendix 2. It is expected that implementation of actions will begin as soon as is practicable. Any reference to a year means a calendar year unless otherwise stated.

All agreed rules and procedures will be operated in accordance with the authorisations relating to the abstraction of water by Wessex Water from the sources identified and listed in Schedule 1.

## 2 Use of Chitterne, Alton Pancras and Cowbridge for Public Water Supply

### 2.1 General principles

Set out below are rules that are designed to ensure that full use is being made of the other sources of water available to Wessex Water, including the bulk supply from Bristol, before abstractions are made from Chitterne, Alton Pancras and Cowbridge above agreed minimum rates. An exception to this is made for:

- Times when river flows are high and there is no environmental benefit in restricting abstraction.
- Operational emergencies
- Local demands and sweetening flows

Operational emergencies are losses of source output due to unplanned events such as pollution, turbidity, nitrate, algae, power failure and system failure. They do not include planned events such as maintenance of sourceworks when any necessary timely arrangements will be made with the Agency. The triggers that allow these exceptions will be described later.

The key operating rule is, subject to the exceptions above, that no abstraction is made from Chitterne, Alton Pancras or Cowbridge unless Wessex Water is maximising their import from Bristol Water at 11.3 MI/d. However, operationally it is very difficult to ensure that the supply is maximised every day, as the actual take is dependent on water use from service reservoir storage. To allow for this, when Wessex are required to maximise the use of the Bristol supply before increasing abstraction from Chitterne, Alton Pancras or Cowbridge, it is expected that Wessex Water will take at least an average of 10 MI/d of the 11.3 MI/d bulk supply from Bristol Water during the period of increased use of Chitterne, Alton Pancras or Cowbridge.

This level of use of the Bristol supply (10 MI/d) is referred to as the Bristol Threshold Value (BTV). The BTV would be increased by 3 MI/d if an additional 3 MI/d is secured from Bristol Water, providing a total bulk supply of 14.3 MI/d, and pro-rata if lesser additional volumes are secured.

### 2.2 Chitterne Public Water Supply Operating Rules

Abstraction from Chitterne will be limited to 2 MI/d unless any of the following apply:

- if the flow at Codford Gauging Station is greater than or equal to 0.6 m<sup>3</sup>/sec over the preceding seven days up to 9 MI/d may be abstracted. If the flow at Codford Gauging Station is greater than or equal to 1.2 m<sup>3</sup>/sec over the preceding seven days, up to 16 MI/d may be abstracted. For this condition the BTV rule does not apply
- there is an operational emergency when up to 16 MI/d may be abstracted. For this condition the BTV rule does not apply
-

- more than the BTV is being imported from Bristol Water when up to 16 MI/d may be abstracted

The abstraction will be constrained to stated values based on the flows in Chitterne Brook that are measured at the Codford gauging station.

Continued abstraction from Chitterne when river flows are high and aquifer storage levels are high will reduce operating costs without affecting the environment.

Up to 2 MI/d from Chitterne is required to ensure that transfer mains are kept disinfected and to supply the local area demand at 0.2 MI/d. These figures will be reviewed as operational experience is gained and are expected to reduce.

The two river flow values detailed above to constrain abstraction are given below in a reference table in m<sup>3</sup>/sec and MI/d.

### Units conversion table

Units of m<sup>3</sup>/sec are used operationally for telemetered river flow values

Gauging Station	National Grid Reference	flows m <sup>3</sup> /sec	flows MI/d
Codford	ST 9709 4006	0.6	51.8
		1.2	103.7

## 2.3 Alton Pancras Public Water Supply Operating Rules

Abstraction from Alton Pancras will be limited to up to 1.6 MI/d unless any of the following apply:

- if the flow\* at Little Puddle Gauging Station is greater than or equal to 0.6 m<sup>3</sup>/sec over the preceding seven days up to 4.5 MI/d may be abstracted. For this condition the BTV rule does not apply
- there is an operational emergency when up to 4.5 MI/d may be abstracted. For this condition the BTV rule does not apply
- more than the BTV is being imported from Bristol Water when up to 4.5 MI/d may be abstracted

\*flow means the river flow excluding any stream support water.

The abstraction will be constrained to the above stated value based on the flows in River Piddle that are measured at the Little Puddle gauging station.

Continued abstraction at 1.6 MI/d is required to meet local areas of demand. This figure will be reviewed as operational experience is gained and may be reduced.

Continued abstraction at higher rates from Alton Pancras when river flows are high and aquifer storage levels are high will reduce operating costs without affecting the environment.

The river flow value established to constrain abstraction is given below in a reference table in m<sup>3</sup>/sec and MI/d.

**Units conversion table**

Units of m<sup>3</sup>/sec are used operationally for telemetered river flow values

Gauging Station	National Grid Reference	flows m <sup>3</sup> /sec	flows MI/d
Little Puddle	SY 7185 9646	0.6	51.8

**2.4 Cowbridge Public Water Supply Operating Rules**

Abstraction from Cowbridge will not take place unless any of the following apply:

- if the flow at Great Somerford Gauging Station is greater than or equal to 1.2 m<sup>3</sup>/sec over the preceding seven days up to 5 MI/d may be abstracted. If the flow at Great Somerford Gauging Station is greater than or equal to 1.8 m<sup>3</sup>/sec over the preceding seven days, up to 7.5 MI/d may be abstracted. However if the flow is above these levels and stream support is in use on either the Tetbury or Sherston Avon then there will be no abstraction.
- there is an operational emergency when up to 7.5 MI/d may be abstracted.
- more than the BTV is being imported from Bristol Water when up to 7.5 MI/d may be abstracted.

The abstraction at Cowbridge will be constrained to the stated value based on the flows in Malmesbury Avon that are measured at the Great Somerford gauging station.

Continued abstraction from Cowbridge when river flows are high and aquifer storage levels are high will reduce operating costs without affecting the environment.

The two river flow values have been established to constrain abstraction are given below in a reference table in m<sup>3</sup>/sec and MI/d.

**Units conversion table**

Units of m<sup>3</sup>/sec are used operationally for telemetered river flow values

Gauging Station	National Grid Reference	flows m <sup>3</sup> /sec	flows MI/d
Great Somerford	ST 966 832	1.2	103.7
		1.8	155.5

**2.5 Operating Public Water Supply during Dry Periods**

In the event of exceptionally dry weather, Wessex Water will take appropriate action, possibly including the imposition of a hosepipe restrictions. In anticipation of exceptionally

Operating Agreement December 2002

dry weather, Wessex Water will convene a meeting with the Environment Agency within 10 working days of the anticipated reservoir storage value one month hence being less than the Wessex Water water conservation rule storage value (as shown on the attached graph of reservoir storage from the latest accepted Wessex Water Drought Plan currently Final Version 31 March 2000). The purpose of the meeting will be for Wessex Water to inform the Agency of their intended course of appropriate action with particular reference to forecast abstraction patterns from Chitterne, Alton Pancras and Cowbridge.

**WESSEX WATER WATER CONSERVATION RULE STORAGE**

**WESSEX WATER DROUGHT PLAN CURRENTLY FINAL VERSION 31 MARCH  
2000**

### 3 Stream Support Operating Rules

The operating rules for stream support for the River Wylde, River Piddle and Upper Bristol Avon are set out in the sections below. These arrangements will need to be extended as authorisations to abstract or ascertain groundwater quantities are determined or existing authorisations are modified. For each stream support site, there are a number of protective actions that need to be in place. These actions are:

- Erosion control;
- Pollution Prevention;
- Extraordinary Arrangements;

#### Erosion control

Wessex Water is responsible for preventing the augmentation causing any scour damage to the riverbed at the discharge point

#### Pollution Prevention

Wessex Water is responsible for ensuring that when operating the augmentation scheme and any drain-down of pipework that there is no ingress of polluted water from the augmentation pipes into the receiving watercourse.

Note:

Any stream support works may require prior authorisation through a Consent to Discharge.

#### Extraordinary Arrangements

There will be written arrangements detailing the required actions when stream support pumps fail, planned shut downs are required or there is a pollution or a water quality incident. These arrangements and arrangements for the availability of standby pumps and power within stated times will be set out in Appendix 3. Appendix 3 will be amended prior to commissioning of these new arrangements including agreement on prioritising the use of the Chitterne, Alton Pancras and Cowbridge sources during planned shutdowns of other sources or other operational emergencies.

#### 3.1 Chitterne Brook Stream Support Operating Rules

Action is required by Wessex Water when flow in the Chitterne Brook as gauged at Codford Gauging station is less than a prescribed flow. Any stream support from the Chalk aquifer that may be authorised for use with the aim of achieving indicative seasonal target flows, will be operated in accordance with the rates of stream support available, the indicative prescribed flows for indicative periods during the year and the indicative target flows that are detailed in the tables below.

TABLE of indicative periods, indicative prescribed flows and indicative target flows

Period	Prescribed Flow	Maximum rate of Stream Support Water for target Flow	Main Purpose and target flow
From 1 <sup>st</sup> April to 31 <sup>st</sup> March inclusive (All year)	0.035 m <sup>3</sup> /s	Up to 3 MI/d	To maintain at least 10 cm of water in the channel by seeking to achieve a target flow of 3 MI/d for amenity purposes in Codford St Mary
From 1 <sup>st</sup> April to 31 <sup>st</sup> July inclusive	0.058 m <sup>3</sup> /s	Up to an additional 2 MI/d if abstraction from Chitterne for PWS has <b>exceeded</b> an average of 2 MI/d since the 1 <sup>st</sup> April in the preceding calendar year	To mitigate for the impact of abstraction $\geq$ 2 MI/d to safeguard juvenile salmonid production in the perennial reach (based on PHABSIM results:- the target flow of 5 MI/d provides for around 35% of maximum potential habitat for fry/juvenile fish in m <sup>2</sup> /1000m)
From 15 <sup>th</sup> November to 15 <sup>th</sup> January inclusive	0.104 m <sup>3</sup> /s	Up to an additional 2 MI/d if abstraction from Chitterne for PWS has <b>exceeded</b> an average of 2 MI/d since the 1 <sup>st</sup> April immediately preceding	To safeguard salmonid spawning potential in the perennial reach. Spawning habitat is satisfactory at 40% of maximum physical habitat. This is reached at a target flow of 9 MI/d
1 <sup>st</sup> February	0.45 m <sup>3</sup> /s (39 MI/d) at Norton Bavant Gauging Station	If flows at Norton Bavant Gauging Station* are less than or equal to 0.45 m <sup>3</sup> /s on the 1 <sup>st</sup> February and stream support has been operating on the Chitterne Brook, the stream support will be reduced to zero over the period up to 28 <sup>th</sup> February in a staged manner. Not including any stream support that may be being operated from Kingston Deverill or Brixton Deverill.	To allow the affects of a natural two year groundwater drought to occur. In the event of a two-year groundwater drought the impact of abstraction is outweighed by the effects of the drought and the ecology of the stream should not be artificially maintained by stream support.



### Units conversion table

Units of m<sup>3</sup>/sec are used operationally for telemetered river flow values

Gauging Station	National Grid Reference	target flows m <sup>3</sup> /sec	target flows MI/d
Codford	ST 9709 4006	0.035	3
		0.058	5
		0.104	9
Norton Bavant	ST 9085 4275	0.45	39

A timetable for implementation is shown in Appendix 2.

### 3.2 River Piddle (Upper section) Stream Support Operating Rules

Any stream support that is authorised for use with the aim of maintaining indicative target flows of 2.16 MI/d at South House gauging station and 1.55 MI/d at Little Puddle gauging station will be operated in accordance with the rules detailed below. The aim is to secure amenity flows in sections of the upper section of the River Piddle below Alton Pancras to the stretch of the river around Waterston below Little Puddle gauging station.

During 2002 and possibly up to the summer of 2003 up to 2.5 MI/d of water may be required for stream support, if available, from the existing Alton Pancras public supply boreholes after demand for public water supply has been met. The total abstracted will remain within existing authorised quantities. Where there is insufficient water available due to abstraction for public water supply, or if the water discharged from Alton Pancras cannot maintain an indicative target flow of 0.018 m<sup>3</sup>/s at Little Puddle gauging station then in addition up to 2 MI/d should be abstracted from either the borehole at West Lodge or White Lackington with the aim of maintaining a flow of 0.018 m<sup>3</sup>/s at Little Puddle gauging station.

If it is not possible to maintain 0.025 m<sup>3</sup>/s at South House gauging station, continue to add 2.5 MI/d from Alton Pancras in an attempt to maintain 0.018 m<sup>3</sup>/sec at Little Puddle gauging station. If 0.018 m<sup>3</sup>/sec can not be maintained at Little Puddle gauging station then phase in the full use of West Lodge or White Lackington.

If during 2002, it is demonstrated that stream support from the Alton Pancras source can maintain the target flows then from the summer of 2003 onwards it is anticipated the flow targets will be met with up to 4.5 MI/d from a new stream support borehole located close to Alton Pancras or Piddletrenthide. Alternatively, a further trial using water from Alton Pancras may be required in the summer of 2003, in which case a new stream support borehole would be commissioned in 2004 if this option is still agreed to be appropriate for improving river flows in the Upper Piddle.

**Units conversion table**

Units of m<sup>3</sup>/sec are used operationally for telemetered river flow values

Gauging Station	National Grid Reference	target flows m <sup>3</sup> /sec	target flows MI/d
South House	SY 7074 9907	0.025	2.16
Little Puddle	SY 7185 9646	0.018	1.55

A timetable for implementation is shown in Appendix 2.

**3.3 Upper Bristol Avon Stream Support Operating Rules**

Under the current licence, as amended by the Groundwater Consent, stream support is switched on when the flows in the River Avon fall below pre-defined target or trigger flow rates (whichever is reached first). Flow rates are continuously monitored by the Agency and the data made available to Wessex Water. When flow rates approach the target rates Wessex Water notify the Agency and the stream support is switched on. Similarly as stream flows increase the augmentation is switched off when the flows are considered adequate to meet targets under natural conditions.

The boreholes currently licensed for stream support and those consented to abstract the quantities of groundwater for the purpose of investigating the sustainability and impacts of stream support are in the Table below. The consented quantities are in addition to the licensed values shown.

**Stream Support Borehole Table**

Tributary	Borehole	National Grid Reference	Quantity Licensed 17/53/01/G/410 in MI/d	Quantity Consented in MI/d
Sherston Avon	Luckington SS Borehole	ST 8 8	2.5	7.5
	Stanbridge SS Borehole	ST 8 8	2.5	7.5
Tetbury Avon	Tetbury STW SS Borehole	ST 8 9	2.5	7.5

All of the stream support discharges will contribute to increased flow at Great Somerford, which is down stream of the confluence of the Sherston and Tetbury Avon. The increased rate of consented stream support is to be delivered at a variable rate to meet target flow rates on the River.

The current indicative trigger flows, target flows and their locations, together with the rates of stream support available to meet those target flows, are detailed in the table below.

**TABLE of the indicative trigger and target river flows**

Units of m<sup>3</sup>/sec are used operationally for telemetered river flow values

<b>Trigger Flows</b>	<b>Maximum Rate of Stream Support Water for Target Flow</b>	<b>Target Flows and Target Points</b>	<b>Main Purpose</b>
Stream support will be operated when flows at St Johns Bridge Gauging Station recede below 0.083 m <sup>3</sup> /s.	At a rate not exceeding 20 MI/d from Luckington SS and Stanbridge SS boreholes	Stream Support will be operated with the aim of achieving a target flow at St Johns Bridge Gauging Station of 0.083 m <sup>3</sup> /s	To mitigate for abstraction impacts on flows in the Sherston Avon through Malmesbury and to improve the amenity value of the river.
Stream Support will be operated when flows at Brokenborough Gauging Station recede below 0.092 m <sup>3</sup> /s, or when flows at Abbey Weir flow reference point recede below 0.079 m <sup>3</sup> /s; whichever occurs first,	At a rate not exceeding 10 MI/d from Tetbury SS borehole	Stream Support will be operated to try and maintain a target flow at Abbey Weir of 0.079 m <sup>3</sup> /s.	To mitigate for abstraction impacts on flows in the Tetbury Avon through Malmesbury and to improve the amenity value of the river.
Stream support will be operated when flows at Great Somerford Gauging Station recede below 0.324 m <sup>3</sup> /s.	At a rate not exceeding 30 MI/d from Luckington SS, Stanbridge SS and Tetbury SS boreholes.	Stream support will be operated to try and maintain a target flow at Great Somerford Gauging Station of 0.324 m <sup>3</sup> /s.	To mitigate for abstraction impacts on flows in the main Avon and to increase the number of days available for salmonid fishing.

Indicative trigger flow at Fosseway GS is currently set at 14 MI/d to meet the amenity needs of the upper reached of the Sherston Avon. The appropriateness of this trigger will be reviewed during 2003/4.

Indicative target flows at Great Somerford gauging station of 75 MI/d in April, 55 MI/d in May and 45 MI/d in June to help support the fishery downstream of Malmesbury will be

tested in 2003/04 using increased pumping requirement authorised under a Section 32(3) Consent. This will allow an assessment of the groundwater impacts, and with monitoring on the effectiveness on the flow regime and ecological interests. Such testing may well result in a future revision to detailed operational scenarios required at this site.

Flows on the Tetbury Avon at Abbey Weir in Malmesbury will be gauged at fortnightly intervals by the Agency during the summer months to monitor compliance with the indicative target flow of 6.8 MI/d.

Within the existing Abstraction Licence there are prescribed flows of 8 MI/d set for Fosseyway Gauging Station on the Sherston Avon, 6.5 MI/d set for Brokenborough Gauging Station and 28 MI/d set for Great Somerford Gauging Station, all of which are still in force. Also covered by this licence is the requirement to provide stream support from Lower Stanton St Quintin, Hullavington and Charlton boreholes.

There are no plans to continue with stream support from the Park Road or Cowbridge borehole sources, detailed in the licence. Stream support from both is at the expense of river flows and therefore offers no significant net gain.

### Unit conversion table

Units of m<sup>3</sup>/sec are used operationally for telemetered river flow values

Gauging Station	National Grid Reference	target flows m <sup>3</sup> /sec	target flows MI/d
St Johns Bridge	ST 936 868	0.083	7.2
Brokenborough	ST 914 893	0.092	8
Great Somerford	ST 966 832	0.324	28*
		0.521	45
		0.637	55
		0.868	75
Flow reference point	National Grid Reference	target flows m <sup>3</sup> /sec	target flows MI/d
Abbey Weir	ST 933 874	0.079	6.8
		Rate of Stream Support Water for target Flow	
		flows m <sup>3</sup> /sec	flows MI/d
		0.029	2.5
		0.087	7.5
		0.116	10
		0.232	20
		0.374	30

\* this is also a prescribed flow in condition in associated Wessex Water Public Water Supply Abstraction Licences.

A timetable for implementation is shown in Appendix 2.

## 4 Liaison and Reporting Arrangements and Data Provision/Exchange

### 4.1 Liaison Arrangements

A review of progress to restore river flows in the River Wylde, River Piddle and Upper Bristol Avon will take place at three-monthly intervals. Where possible the meetings to review progress will be concurrent with routine water resources liaison meetings between the Agency and Wessex Water.

### 4.2 Provision and Exchange of Data

Wessex Water will provide the Environment Agency with sufficient information to demonstrate their operation has been in accordance with the Statement of Intent and this Operating Agreement. This information, along with any proposed amendments of Schedule 2 of this Operating Agreement, will be the subject of a standing agenda item at the routine water resources liaison meetings every three months between the Agency and Wessex Water. Routine data will be exchanged and provided on a monthly basis. Any review by the Agency of this data will be presented at the three-monthly liaison meetings. However on an exception basis if the Agency become aware of unexpected abstractions from Chitterne, Cowbridge and Alton Pancras immediate contact will be made with Wessex Water seeking supporting information. The contact arrangements and details are given in Appendix 4. Routine data and information exchange arrangements for the stream support operations are given in Appendix 5. These Appendices will be completed by 31 March 2003.

### 4.3 Annual Reporting

Reporting will follow the timetable below:

- Technical reports will be provided by Wessex Water to the Agency by 31 January each year, providing the field data and analysis up to 30 November the previous year.
- A summary report will be prepared for DEFRA by 31 December 2002, and by 1 March each year for 2004 onwards. Wessex Water will take the lead in preparing this report but with assistance from the Agency.
- Following any representations on the summary report appropriate changes will be made to the provisions of Schedule 2 by 31 March each year.
- There will be a formal review of the operation of this Agreement in December 2006.

In addition to the requirements of any authorisations, the technical reports will detail:

- the volume of water abstracted from Chitterne, Cowbridge and Alton Pancras
- explanation of any amounts taken in excess of local demands / sweetening flows
- an estimate of what the usage of the sources would have been if it were not for this agreement.
- the volume of stream support water abstracted (for those stream support sources covered by this agreement)
- the river flows that resulted
- the ecological monitoring results
- conclusions / recommendations for future operation

#### 4.4 Environmental Monitoring Programme

Wessex Water will undertake a programme of environmental monitoring in conjunction with existing Agency monitoring arrangements for the River Wylfe, the River Piddle and the Upper Bristol (Malmesbury) Avon. The agreed programme of monitoring and reporting is set out in Appendix 6. The programme may be amended by agreement at any appropriate time in the programme period.

**Signed on behalf of Wessex Water (Wessex Water Services Ltd)**

.....

Director of Finance and Regulation

Date.....

**Signed on behalf of the Agency (Environment Agency, South West Region)**

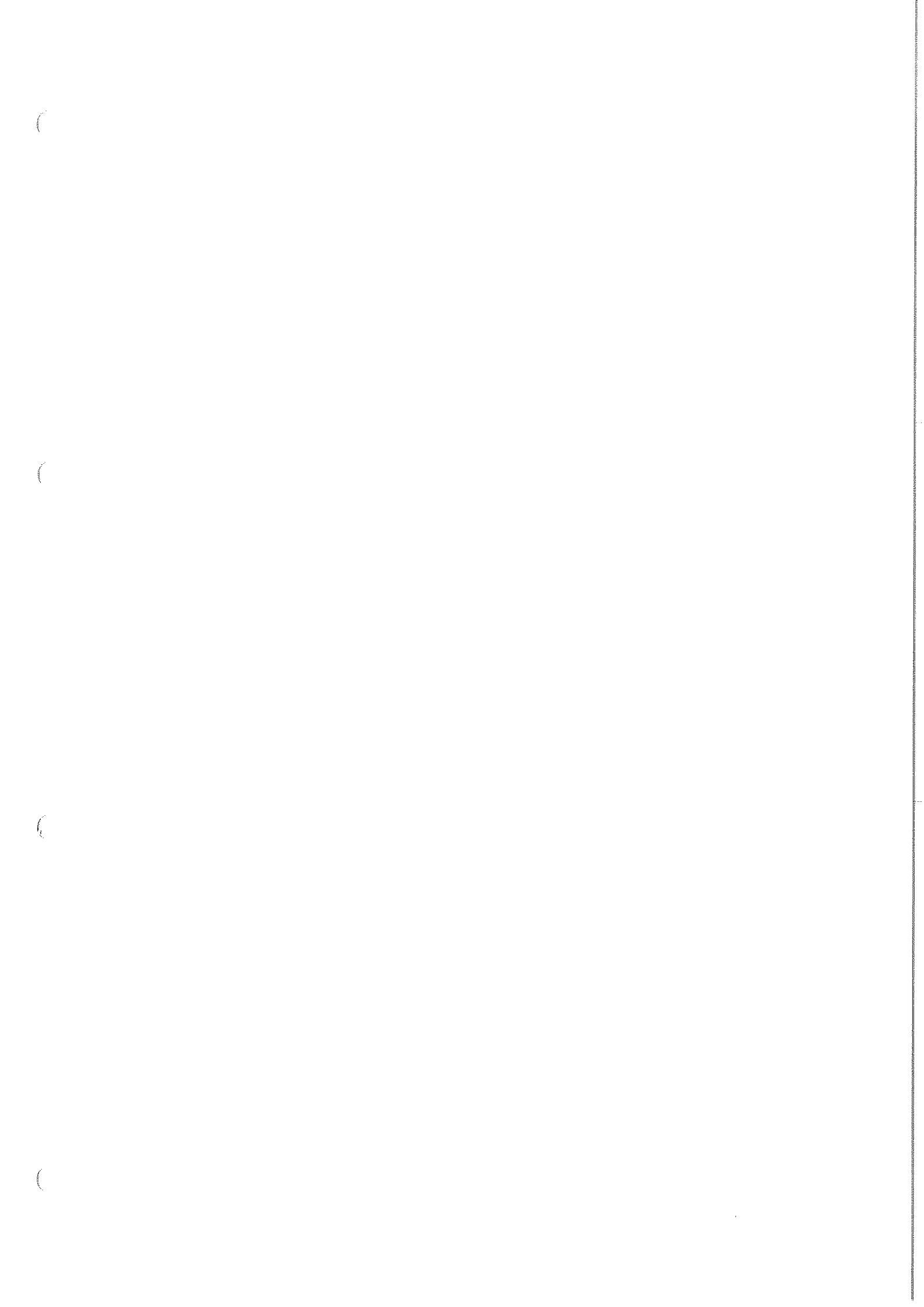
.....

Regional Director

Date.....







Appendix 2 Overall Timetable

Measure	Plans complete	Full use commissioned by
Maximising the use of their existing 11.3 Ml/d bulk supply from Bristol Water if necessary	June 2002	March 2003
Taking an extra bulk supply, estimated at between 1.8 Ml/d and 3 Ml/d, from Bristol Water if necessary	September 2002	March 2003 <sup>*(1)</sup>
In accordance with their Drought Contingency Plan, taking appropriate actions in severe drought conditions to conserve resources and investigating how these actions impact on river flows	Review April 2000 Drought Contingency Plan (DCP) by March 2003	March 2003
Following best practice leakage control measures to reach their economic level of leakage during 2002/03 and maintaining leakage at the economic level	June 2002	March 2003
Continuing to pursue actively economic demand management measures in order to achieve best practice for an area where water resources are limited.	June 2002	June 2002 onwards
Pursuing a variation in their existing abstraction licence to take an additional 3 Ml/d from Wimbleball reservoir during winter months within existing treatment capacity and infrastructure constraints	March 2003 <sup>*(1)</sup>	September 2003
Mitigate any continuing impacts of their abstractions through the provision of stream support:		
Chitterne Brook	Abstraction licence application November 2002	March 2003
River Piddle – upper section	Abstraction licence application November 2004	March 2005
Upper Bristol Avon –Luckington, Stanbridge and Tetbury	Abstraction licence application November 2004	March 2005
Formal review of operation of first phase	December 2006	December 2006 <sup>*(2)</sup>

<sup>\*(1)</sup> may need to be adjusted in the light of the investigation

<sup>\*(2)</sup> may need to be adjusted in light of climatic conditions

CHITTERNE BROOK DETAILED TIMETABLE

Year	Plant	Monitoring	Other
2002	Work to discharge arrangements.	This will include: Hydrological, Hydraulic, Ecological and water quality. Manual water levels. Transducers in new boreholes. Analysis and reporting of above. Comparison with River Till (unsupported). Full details will be documented in any Section 32(3) Consent	Consent for summer 2002. Trial new prescribed flows. Formal licence application Nov 2002 for existing chalk stream support borehole. EN Approval. Review lease arrangements.
2003	Replace discharge pipeline. Provision of permanent pumping plant rather than hired and standby borehole.  Land issue	Reduced monitoring to key points. Short annual report.	Application for consent for additional chalk stream support borehole. Abstraction licence application determination for existing chalk stream support borehole by 31 March. Formal licence application for additional chalk borehole.
2004	None	As above	Abstraction licence application determination for additional chalk stream support borehole.
2005	None	As above	Report to support abstraction licence application (Nov 2005, unless harmonised with CAMS common end-date) for renewal of time limited abstraction licence, if required.
2006	None	As above	Full report on effects for last five years
2007 et seq	None	As above	Any future licence renewal with CAMS process. CAMS common end-date 31/03/13

RIVER PIDDLER DETAILED TIMETABLE

Year	Plant	Monitoring	Other
2002	Alton Pancras trial stream support up to 2.5 Ml/d subject to needs for public water supply.  West Lodge or White Lackington up to 2 Ml/d if no Alton Pancras stream support available or effective	This will include: Hydrological, Hydraulic, Ecological and water quality. Manual water levels. Full details will be documented in any Section 32(3) Consent.	Consent for summer 2002 to test the borehole to achieve river flows with stream support from Alton Pancras  Investigate site for new stream support (duty and standby) borehole close to Piddlehinton
2003	Drill new stream support Winter 2002/03. Provide permanent plant.  Provide mains power and telemetry  Operate new stream support borehole	As above	Consent to test any of the existing borehole(s) to achieve river flows with stream support. Consent to drill and test any new borehole(s) to achieve river flows with stream support.
2004	Drill new observation boreholes Winter 2003/04 as required.	This will include: Ecological and water quality Manual water levels Transducers in new boreholes. Full details will be documented in any Section 32(3) Consent Reporting of above.	Abstraction Licence application for stream support November 2004
2005	None	Reduced monitoring and reporting	Determination of Abstraction Licence application, by 31 March 2005

## RIVER PIDDLE DETAILED TIMETABLE Continued

Year	Plant	Monitoring	Other
2006	None	As above	Report on full years trials and licence application
2007 et seq	None	As above	Any future Licence renewal with CAMS process. CAMS common end-date 31/03/17

## UPPER BRISTOL AVON (MALMESBURY) DETAILED TIMETABLE

Year	Plant	Monitoring	Other
2002	Complete observation borehole programme	This will include: Ecological and water quality Manual water levels (enhanced network) Transducers in new boreholes Reporting of above. Full details will be documented in any Section 32(3) Consent	Consent increased stream support. Run flat rate stream support. Order of operation to optimise use of Luckington and Stanbridge. This is due to proximity of Luckington to the By Brook and concerns as to the ability of this borehole to provide sufficient stream support under dry conditions
2003	Winter 2002/03 - Provision of assist/ standby boreholes at Luckington and Tetbury. Provision of variable speed pumps at these two sites.	As above and monitoring associated with possible revised target flow.	Possible trialling of revised target flow at Great Somerford GS. Consent 2003.
2004		As above	Possible trialling of revised target flow at Great Somerford GS Formal Licence application November 2004.
2005		Reduced monitoring to key points. Short annual report.	Licence to be determined by 31 March 2005.

UPPER BRISTOL AVON (MALMESBURY) DETAILED TIMETABLE Continued

Year	Plant	Monitoring	Other
2006		As above	Full report on effects for last five years
2007	None	As above	Any future licence renewal with CAMS process. CAMS common end-date 31/03/17

## Appendix 3 Extraordinary Arrangements

### 1. Standby power for Stream Support water arrangements

#### 1.1 Chitterne

Provision of standby power will be by mobile generators. The response time for providing power in the event of mains power failure will be within 12.5 hours of mains power failure. In addition, suitable provisions to forestall the rapid loss of stream support water that may strand fish in pools and lead to fish mortalities will be agreed and put in place if possible as soon as possible.

#### 1.2 Alton Pancras

Provision of standby power will be by mobile generators. The response time for providing power in the event of mains power failure will be within 12.5 hours of mains power failure.

#### 1.3 Malmesbury Avon

Provision of standby power will be by mobile generators for the Luckington, Tetbury and Stanbridge sites the response time will be 28.5 hours (4 hours from alarm to diagnosis, 24 hours for delivery (hired in because of larger size), 30 minutes for connection) for the re-connection of power in the event of mains power failure.

### 2. Prioritised use of Chitterne, Alton Pancras and Cowbridge for Public Water Supply

#### 2.1 Prioritised use with no water quality constraints

The order of reduction of abstraction for public water supply should be Chitterne, then Alton Pancras and then Cowbridge. Current infrastructure constraints in the distribution system suggest that it is difficult to gain early reductions at Chitterne and Alton Pancras by any continued use of Cowbridge.

If increased abstraction from Chitterne, Alton Pancras and Cowbridge is required and a phased increase is possible the order of increase of abstraction for public water supply should be Cowbridge, then Alton Pancras and then Chitterne. Current infrastructure constraints in the distribution system suggest that it is difficult to delay any required increase at Chitterne and Alton Pancras by using Cowbridge.

#### 2.2 Prioritised use with unusual operational or water quality constraints

There is a concern about possible pollutant contamination being drawn into the Cowbridge borehole. Once this water quality threat is clearly defined its effect on priority of use of sources for public water supply will be reviewed.

## Appendix 4 – Liaison Contact Arrangements

The contact in the Agency is Alan Weston tel no. 01392 442060 or Sheila Greenfield tel no 01392 442090.

These arrangements will remain in place until contacts in the Regional Strategic Unit and Areas are finalised.

The contact for Wessex Water is Luke de Vial tel no. 01225 526347 or Lucy Bradley tel no 01225 526420.



## Appendix 5 – Provision and Exchange of Data

Current discussions are aimed at completing agreed arrangements for monitoring and collating data and data analysis for applications to authorise or modify abstractions. Once these are complete the arrangements will be recorded in this appendix by the dates shown for the three main sites given below.

### Chitterne, Wylde

To be set out by 31 March 2003.

### Piddle, Alton Pancras

To be set out by 31 March 2003.

### Upper Bristol Avon (Malmesbury)

To be set out by 31 March 2003.

Appendix 6 - Environmental Monitoring Programme

NGR is National Grid Reference.

**CHITTERNE BROOK**

<b>DATA REQUIRED</b>	<b>MONITORING SITES</b>	<b>FREQUENCY</b>	<b>PERIOD</b>	<b>METHOD</b>	<b>BY</b>
Macroinvertebrate Surveys	Monitoring sites at NGR: ST 972 398 ST 971 401 ST 969 404 ST 974 415	Survey every year commencing 2001	Spring and autumn before and after stream support operation	Standard methodology to be agreed with EA.	WW
River Macrophyte Surveys	Monitoring sites at NGR: ST 969 403 ST 974 415 ST 990 438	Survey every year commencing 2002	Spring and autumn before and after stream support operation	Repeat of Nigel Holmes Survey of 1992 to 1995	WW
Qualitative Electro Fishing Surveys	Sites to be established	Survey every other year commencing 2002	May/June and September/October	Electro Fishing	WW
Trout Spawning Success Surveys	Sites to be established	Survey every year commencing 2001/2	Dec/Jan fortnightly	Redd Counting	WW

**RIVER WYLYE**

<b>DATA REQUIRED</b>	<b>MONITORING SITES</b>	<b>FREQUENCY</b>	<b>PERIOD</b>	<b>METHOD</b>	<b>BY</b>
Macroinvertebrate Surveys	Sites to be agreed with Environment Agency	Survey every year commencing 2003	Spring, Summer and Autumn	Standard methodology to be agreed with EA.	WW
River Macrophyte Surveys	Monitoring sites as established in previous surveys	Survey every year ongoing since 1998	Spring, Summer and Autumn	100m MTR macrophyte survey	EA
Qualitative Electro Fishing Surveys for minor species	Sites to be established	Survey every other year commencing 2003		Electro Fishing	WW
River water quality Surveys (GQA)	Established sites	Ongoing every year	Monthly	Spot sampling	EA

**RIVER TILL**

<b>DATA REQUIRED</b>	<b>MONITORING SITES</b>	<b>FREQUENCY</b>	<b>PERIOD</b>	<b>METHOD</b>	<b>BY</b>
Macroinvertebrate Surveys	Sites to be agreed with ENVIRONMENT AGENCY	Survey every year commencing 2003	Spring, Summer and Autumn	Standard methodology to be agreed with EA.	WW
River Macrophyte Surveys	Monitoring sites at NGR: SU 062 450 SU 069 432 SU 077 412 SU 076 396 SU 072 386	Survey every year commencing 2003	Spring/autumn	Repeat of Nigel Holmes Survey of 1992 to 1995	WW
Qualitative Electro Fishing Surveys	Sites to be established	Survey every other year commencing 2003	May/June	Electro Fishing	WW
Trout Spawning Success Surveys	Sites to be established	Survey every year commencing 2002	Dec/Jan fortnightly	Redd Counting	WW
River water quality Surveys (GQA)	Established sites	Ongoing every year	Monthly	Spot sampling	EA

**RIVER PIDDLE**

<b>DATA REQUIRED</b>	<b>MONITORING SITES</b>	<b>FREQUENCY</b>	<b>PERIOD</b>	<b>METHOD</b>	<b>BY</b>
Macroinvertebrate Surveys	Monitoring sites at NGR: ST 700 023 ST 703 007 SY 705 997 SY 708 988 SY 711 982 SY 714 971 SY 719 964	Survey every year commencing 2002	Spring, Summer and Autumn Surveys	Standard methodology as agreed with EA. (LIFE)	WW
Macrophyte surveys	Sites to be agreed with ENVIRONMENT AGENCY	Survey every year commencing 2003	Spring/Autumn	100m MTR macrophyte survey	WW
Qualitative Electro Fishing Surveys	Monitoring sites as established in previous surveys	Survey every year commencing in 1999		Electro Fishing	EA
River water quality survey (GQA)	Established sites	Ongoing every year	Monthly	Spot sampling	EA

**DEVILS BROOK**

<b>DATA REQUIRED</b>	<b>MONITORING SITES</b>	<b>FREQUENCY</b>	<b>PERIOD</b>	<b>METHOD</b>	<b>BY</b>
Macroinvertebrate Surveys	Monitoring sites at NGR: ST 766 028 ST 774 020 and at Bramblecombe Dewlish & Crawthorne	Survey every year commencing 2003	Spring, Summer and Autumn	Standard methodology as agreed with EA. (LIFE)	WW
Macrophyte Surveys	Sites to be agreed with ENVIRONMENT AGENCY	Survey every year commencing 2002	Spring/Autumn	Standard methodology as agreed with EA.	WW
Qualitative Electro Fishing Surveys	Monitoring sites as established in previous surveys	Survey every year commencing in 1999		Electro Fishing	EA
River water quality survey (GQA)	Established sites	Ongoing every year	Monthly	Spot sampling	EA

**UPPER BRISTOL AVON (MALMESBURY)**

<b>DATA REQUIRED</b>	<b>MONITORING SITES</b>	<b>FREQUENCY</b>	<b>PERIOD</b>	<b>METHOD</b>	<b>BY</b>
Macroinvertebrate Surveys	Monitoring sites at NGR: ST 838 839 ST 843 859 ST 856 857 ST 889 871 ST 929 872 ST 897 920 ST 911 903 ST 922 882 ST 942 861 ST 964 832	Survey every other year	Spring, Summer and Autumn Surveys	Standard methodology as agreed with EA. (LIFE)	WW
River Macrophyte Surveys	Monitoring sites at NGR: ST 838 839 ST 843 859 ST 856 857 ST 889 871 ST 929 872 ST 897 920 ST 911 903 ST 922 882 ST 942 861 ST 964 832	Survey every other year	Spring/Autumn	Standard methodology as agreed with EA.	WW
<i>Cladophora</i> (Blanket Weed) monitoring	Sites to be established	Prior to and during operation of stream support	Summer	Photographic survey	WW
River water quality survey (GQA)	Established sites	Ongoing every year	Monthly	Spot sampling	EA