# Candover Drought Order

# Habitats Regulation Compensation Package

Draft 20 March 2018

**This document has been prepared following consultation with the Environment Agency, Natural England and the Hampshire & Isle of Wight Wildlife Trust. The Agency, Natural England the Trust have worked very hard to develop these packages of monitoring, mitigation and compensation in a very compressed time frame.**

**The contents are broadly agreed but, due to time constraints, are subject to further work. Specifically:**

- **The costs and budget arrangements which underpin this package are to be agreed.**
- **The compensation packages are works in progress and incomplete.**

**The Agency and Southern Water are committed to working together and with Natural England and others to refine these documents and complete the missing information in the near future.**

**In the meantime, these draft documents are shared on a without prejudice basis. The observations and advice of interested parties will be a valuable contribution to that process.**



Southern Water

# Introduction

This document sets out Southern Water Service's ("**SWS**") proposals for a package of measures to compensate for potential adverse effects on the River Itchen Special Area of Conservation ("**SAC**") as a result of Southern Water Service's ("**SWS**") abstraction from the Candover Boreholes up to 27 Ml/d and discharge up to 5 Ml/d into the Candover Stream via the existing outfall and discharge of up to 25 Ml/d via a new pipeline to a new discharge point located on the River Itchen, pursuant to a Drought Order ("**the Candover Drought Order**").

This document has been prepared by SWS in respect of the matter before the Planning Inspectorate (ref. RSA/WR/00016/17/18) as part of a settlement agreement with the Environment Agency ("**EA**") ("**the Settlement Agreement**").

# Content of this paper

The purpose of this document is to set out a package of compensatory measures in relation to the possible adverse effects on the River Itchen SAC of abstraction pursuant to a Candover Drought Order.

It sets out the principles used to develop the proposed package and provides a high level of scope for each measure. It has been developed by SWS with advice from NE and the EA.

Agreeing the measures at this stage is one aspect of ensuring that SWS is "application ready" for the purposes of applying for a Candover Drought Order.

# Summary of proposed measures

The aim of the proposed package of measures is to compensate for the potential adverse effects of the Candover drought order on the Itchen SAC, so to maintain the coherence of the Natura 2000 series with respect to: H3260 Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitricho-Batrachion* vegetation (Chalkstream Habitat); S1106 Atlantic salmon *Salmo salar and* S1044 Southern damselfly *Coenagrion mercuriale*.

On the best available evidence and subject to further assessment and agreement, the proposed package of measures is currently considered by the EA and NE to be sufficient to compensate for the most likely adverse effects of abstraction and discharge pursuant to a Candover Drought Order.

This document contains a number of alternative measures, included due to the need to complete scoping exercises and to ensure deliverability of different options. SWS, the EA and NE will consider further whether any alternative measures could be combined in part.

The package of measures includes a range of differing timings. Certain measures, such as feasibility studies, are to be completed upfront; other measures will be triggered by later events. Triggers and ordering of events will be agreed between SWS, the EA and NE.

# H3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (Chalkstream Habitat)

Subject to further assessment and agreement, compensatory restoration measures may be required in respect of the potential for damage to approximately 6km of Annex 1 chalk river habitat in the Candover Stream.

Compensation cannot be undertaken within the Itchen SAC and therefore alternate appropriate locations are required. Potential watercourses supporting chalkstream habitat similar in character to the Candover Stream in need of restoration and to be subject to work have been identified been identified through discussion between SWS, EA, NE and HIWWT and comprise the following options:

- River Dun
- Wallop Brook; or
- Bourne Rivulet.

Each of these is a Test tributary similar in nature to the Candover (further detail will be provided as to their suitability for providing compensation). Three have been identified such that if landowner interest and agreement cannot be achieved on one, then consideration will move to the next to increase the likelihood of fully securing delivery.

Each is sufficiently long, and of similar channel dimensions, that an approximate 6km length similar in character to the Candover can be identified for implementation of compensatory measures (subject to agreement that 6km is an appropriate length).

### *Option 1:* River restoration on the River Dun

***Description:*** The specific measures implemented will be determined based on the requirements of the river to fully ensure the coherence of the Natura 2000 network. They are subject to further assessment and agreement between the parties but are likely to include a selection of the following:

- Riparian vegetation management (increase or decrease shade, create riparian corridor/buffer strip)
- Modify channel maintenance
- Create riparian corridor along channel
- Grazing pressure management (reduce livestock)
- Install fencing to prevent livestock access
- Install fencing to reduce dog/human access to channel
- Bank re-profiling
- Channel narrowing by marginal planting
- Channel narrowing by in channel measures e.g. deflectors or adding woody debris
- Bed level raising
- Create riffles
- Remove bank protection
- Removal of obstructions to fish passage and
- Increasing sinuosity (re-meandering).

***Objective*:** To deliver an appropriate level of compensation for potential adverse effect to the integrity of the Candover Stream in channel chalkstream habitat resulting from the operation of the Candover Drought Order.

***Expected results***: River restoration activities will improve the physical habitat and natural processes within those reaches of the river which will improve the conditions and resilience of the chalkstream communities to natural drought – as characterised by macrophyte, macroinvertebrate and fish communities over an approximate 6km reach of the selected watercourse.

***Timing and Duration***: Implementation timetable to be agreed between SWS, the EA and NE.

***Funding and delivery***: Following further assessment, Southern Water will fund a range of river restoration measures on the River Dun to be identified and delivered by the EA project officer for the Test and Itchen River Restoration Strategy (or other EA officer to be identified by the EA). The appropriate level of funding is to be agreed with the EA. The Environment Agency is responsible for identifying and delivering the appropriate measures once funding has been provided by SWS.

### *Option 2:* River restoration on Wallop Brook

***Description:*** The specific measures implemented will be determined based on the requirements of the river to fully ensure the coherence of the Natura 2000 network. They are subject to further assessment and agreement between the parties but are likely to include a selection of the following:

- Riparian vegetation management (increase or decrease shade, create riparian corridor/buffer strip)
- Modify channel maintenance
- Create riparian corridor along channel
- Grazing pressure management (reduce livestock)
- Install fencing to prevent livestock access
- Install fencing to reduce dog/human access to channel
- Bank re-profiling
- Channel narrowing by marginal planting
- Channel narrowing by in channel measures e.g. deflectors or adding woody debris
- Bed level raising
- Create riffles
- Remove bank protection
- Removal of obstructions to fish passage and
- Increasing sinuosity (re-meandering).

***Objective*:** To deliver an appropriate level of compensation for potential adverse effect to the integrity of the Candover Stream in channel chalkstream habitat resulting from the operation of the Candover Drought Order.

***Expected results***: River restoration activities will improve the physical habitat and natural processes within those reaches of the river which will improve the conditions and resilience of the chalkstream communities to natural drought – as characterised by

macrophyte, macroinvertebrate and fish communities over an approximate 6km reach of the selected watercourse.

***Timing and Duration***: Implementation timetable to be agreed between SWS, the EA and NE.

***Funding and delivery***: Following further assessment, Southern Water will fund a range of river restoration measures on Wallop Brook to be identified and delivered by the EA project officer for the Test and Itchen River Restoration Strategy (or other EA officer to be identified by the EA). The appropriate level of funding is to be agreed with the EA. The Environment Agency is responsible for identifying and delivering the appropriate measures once funding has been provided by SWS.

### *Option 3:* River restoration on Bourne Rivulet

***Description:*** The specific measures implemented will be determined based on the requirements of the river to fully ensure the coherence of the Natura 2000 network. They are subject to further assessment and agreement between the parties but are likely to include a selection of the following:

- Riparian vegetation management (increase or decrease shade, create riparian corridor/buffer strip)
- Modify channel maintenance
- Create riparian corridor along channel
- Grazing pressure management (reduce livestock)
- Install fencing to prevent livestock access
- Install fencing to reduce dog/human access to channel
- Bank re-profiling
- Channel narrowing by marginal planting
- Channel narrowing by in channel measures e.g. deflectors or adding woody debris
- Bed level raising
- Create riffles
- Remove bank protection
- Removal of obstructions to fish passage and
- Increasing sinuosity (re-meandering).

***Objective*:** To deliver an appropriate level of compensation for potential adverse effect to the integrity of the Candover Stream in channel chalkstream habitat resulting from the operation of the Candover Drought Order.

***Expected results***: River restoration activities will improve the physical habitat and natural processes within those reaches of the river which will improve the conditions and resilience of the chalkstream communities to natural drought – as characterised by macrophyte, macroinvertebrate and fish communities over an approximate 6km reach of the selected watercourse.

***Timing and Duration***: Implementation timetable to be agreed between the EA, NE and SWS.

***Funding and delivery***: Following further assessment, Southern Water will fund a range of river restoration measures on Wallop Brook to be identified and delivered by the EA

project officer for the Test and Itchen River Restoration Strategy (or other EA officer to be identified by the EA). The appropriate level of funding is to be agreed with the EA. The Environment Agency is responsible for identifying and delivering the appropriate measures once funding has been provided by SWS.

# S1092 White-clawed crayfish *Austropotamobius pallipes*

***Compensation measure:*** **Captive breeding of white-clawed crayfish, for potential re-introduction to the Upper Itchen tributaries or an ark site**

***Description*****:** The white-clawed crayfish is afforded partial protection under UK legislation, and is listed as a European Union (EU) Habitats Directive Annex II species (EU code 1092). The species is now quite restricted in Hampshire and the population in the Upper Itchen tributaries is considered to potentially be genetically distinct.

To ensure that the genetic distinctiveness of the population is preserved, the following measures are currently proposed:

1) Captive breeding of crayfish specimens from the Candover population
2) Identify and secure sites for release, following implementation of Drought Order
3) Crayfish release, following implementation of Drought Order.

Captive breeding of crayfish specimens from this population

***Measure 1:*** **Captive breeding of crayfish specimens from the Candover population**
Captive-breeding of specimens from this population would ensure that, should re-introductions be necessary to facilitate extension of the range of the species or introduce them to a new site following implementation of the Drought Order, specimens of the same genetic stock would be available.

Bristol Zoological Gardens maintains a white-clawed crayfish captive breeding programme and has been successful in raising and releasing captive bred animals as part of the South West Crayfish Project.

A small number of crayfish would be collected from the Candover Stream and provided to Bristol Zoological Gardens for captive breeding purposes.

This proposal may require the party implementing it to obtain a protected species licence.

***Measure 2:*** **Identify and secure sites for release, following implementation of Drought Order**
Compensation is not usually acceptable in the affected SAC, however given the genetic distinctiveness of this crayfish population it is proposed that release into appropriate habitat within the same SAC would be undertaken following implementation of the Drought Order to supplement the existing population. If however an appropriate location in the SAC cannot be identified then an ark site nearby would be identified.

***Measure 3:*** **Crayfish release, following implementation of Drought Order**
Following implementation of the Drought Order, crayfish would be released, either to appropriate habitat in the SAC or to an ark site.

***Objective*****:** To maintain a stock of captive-bred white-clawed crayfish of the Upper Itchen population genetic stock for re-introduction, if required following implementation of the Drought Order.

***Expected results***: To have available captive-bred white-clawed crayfish of the Upper Itchen population genetic stock for re-introduction, if required following implementation of the Drought Order.

***Timing and Duration***: Secured by the agreement of the plan, Collection of animals: 2018. Captive breeding programme to maintain stock for re-introduction, if required, following use of the Drought Order.

***Funding and delivery***: Southern Water will fund the collection of a small number of animals to commence a captive breeding programme for animals from this Upper Itchen genetic stock and a captive breeding programme for these animals. The animals are proposed to be collected and the project overseen by the Hampshire and Isle of Wight Wildlife Trust ("HIWWT"). Bristol Zoological Gardens are proposed to undertake the captive breeding programme. HIWWT would also assess the suitability of habitat in the SAC, or the identity of an ark site, for release of animals if required following implementation of the DO. These proposed measures are subject to further assessment, and in particular to securing the consent of HIWWT and Bristol Zoological Gardens.

## S1044 Southern damselfly *Coenagrion mercuriale*

**Compensation Measure:** Increasing the resilience of the River Test southern damselfly population.

***Description:*** Compensatory measures are required in respect of the potential for adverse effect to the Itchen southern damselfly population during operation of the Candover Drought Order.

Compensation cannot be undertaken within the Itchen SAC and therefore alternate appropriate locations are required. Although the River Itchen valley is a stronghold for the southern damselfly, there are areas of naturally functioning habitat outside of the Itchen Valley which already support southern damselfly, notably in the Test valley. There is also suitable habitat in the Meon valley, although the species has not been recorded there. The species has poor dispersal capacity and therefore the restoration of natural function to floodplain wetland areas close to existing populations is the preferred approach to delivery of a package of compensatory measures, but if this cannot be delivered then an alternate has been identified.

Key habitat features indicating favourable conditions for the species include:

- A constant (perennial) slow to moderate flow of water;
- Stable water levels
- Channel substrate consisting primarily of silt and detritus;
- Presence of a broad fringe of herbaceous emergent dicotyledon plants along margins, especially water-cress *Rorippa nasturtium-aquaticum* and fool's water-cress *Apium nodiflorum*;
- Presence of some areas of open water (i.e. ditch not completely choked by vegetation);
- Largely (but not necessarily completely) unshaded by bankside shrubs and trees.

Habitat factors that limit the distribution of southern damselfly on sites primarily comprise:

- Development, or presence, of too much scrub;
- Too little water, too little flow, flow not perennial, fluctuating water levels;
- Management of adjacent meadows inappropriate.

The compensatory works currently proposed would supplement, and be additional to, those implemented in respect of the Itchen Drought Order. Based on an initial evaluation and subject to further assessment, the Candover Drought Order would affect approximately 2.5km of the Itchen upstream of Otterbourne waterworks.

In respect of the Candover Drought Order, the following measures are currently proposed:

- Conduct a feasibility study, using a combination of recent survey work by HIWWT, the data from other existing survey programmes, and survey / site visits where information doesn't exist, to identify options for the Test and Meon. Three key option areas have been identified.
  - It has been suggested that land near Mottisfont would be appropriate as it would be close to sites already supporting the species.
  - If it is not possible to identify sites near Mottisfont, then investigate potential for enhancing or creating southern damselfly habitat in the Test near to known sites elsewhere in the catchment, with a focus on, but not restricted to, areas between Timsbury and Stockbridge.
  - If no options prove feasible in the Test valley then review and ground truth the results of River Meon feasibility study conducted in 2006[75].
- Secure management of land and relevant water control structures adjacent (within 1km but ideally within 500m) to, but not currently supporting an existing southern damselfly population in the River Test catchment, or to appropriate areas of floodplain wetland in the Meon.
- Create, or enhance existing, habitat for southern damselfly. The extents of habitat to be created/enhanced in advance of the Drought Order, and following implementation of the Drought Order, are subject to confirmation and on-going discussion but will comprise work to two - four sites. The extent required post implementation will be informed by monitoring and assessment of the impacts at the time.
- Monitoring will be undertaken for 3 years post habitat creation / enhancement and post-use of the Drought Order.
- The need for translocation of the species will be assessed based on the results of the monitoring post habitat creation / enhancement. Southern damselfly has a

[75] **Price, A. (2006).** *An assessment of the potential for watercourses of the River Meon to support southern damselflies*. Research project

weak dispersal capability and therefore this measure may be necessary to ensure the success of the compensation, however translocation has not previously been shown to work for this species and should not be assumed to be successful. This proposal will be subject to further assessment, including in respect of monitoring requirements for the population post translocation.

***Objective:*** To deliver an appropriate level of compensation for potential adverse effect on integrity of the River Itchen southern damselfly population resulting from implementation of the Candover Drought Order, which is accepted as being uncertain.

***Expected results:*** Support to the delivery of habitat enhancement, or habitat creation,that leads to an increase in the number of sites occupied by the southern damselfly population in the Test valley, or the establishment of a population in the Meon valley.

***Timing and duration:*** Implementation timetable to be agreed between SWS, EA and the NE.

***Funding and delivery***: HIWWT to scope and deliver the measures detailed above, which will be funded by Southern Water. These proposed measures are subject to further assessment, and in particular to securing the consent of HIWWT.