

# **Control of the Invasive Non-Native Creeping Water Primrose at Breamore Marsh, Hampshire**

Report relating to the first ten years 2009 - 2019



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**New Forest Non-Native Plants Project**  
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## Document Control

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## Summary

The invasive non-native creeping water primrose *Ludwigia grandiflora* was discovered growing in Round Pond at Breamore Marsh Site of Special Scientific Interest (SSSI) in the New Forest District of Hampshire, United Kingdom (UK), during August 2009. Creeping water primrose is native to South America and is regarded as a high priority for eradication from the wild in the UK due to its potential to cause serious damage to the aquatic environment, as experienced in France, The Netherlands and Belgium. It spreads rapidly by vegetative fragments and forms dense carpets that exclude native wildlife, degrade amenity value, increase siltation and increase the risk of flooding, thereby potentially causing harm to people and property.

The New Forest Non-Native Plants Project, a Local Action Group hosted by Hampshire and Isle of Wight Wildlife Trust (HIWWT), was immediately alerted and recognised the need to take prompt action to prevent the creeping water primrose spreading to the nearby River Avon which is of national and international ecological importance.

The New Forest Non-Native Plants Project arranged for herbicide treatment and hand-pulling.

Further herbicide treatment and hand-pulling was arranged by Source to Sea, a Local Action Group hosted by Wiltshire Wildlife Trust, which was established to control invasive non-native species within the River Avon Catchment in collaboration with HIWWT.

The attempts to control the creeping water primrose by herbicide treatment and hand-pulling were of limited success due to a number of factors. Unseasonably high rainfall had resulted in high water levels in Round Pond which delayed or prevented herbicide treatment being undertaken and the presence of taller vegetation had protected the creeping water primrose from herbicide applications.

By 2013 it was apparent that a different approach was needed. Advice was sought from Johann van Valkenburg of the Netherlands Plant Protection Service and the decision was taken to control the Creeping Water Primrose by excavation.

The work undertaken to excavate creeping water primrose from Round Pond was co-ordinated by Joanne Gore of HIWWT in collaboration with Natural England and the Environment Agency.

The report describes the complexities of securing funding and relevant consents to excavate Round Pond and to dispose of the arisings. The excavation works and associated works to dispose of and cap the excavated material are described in detail.

Following the excavation of Round Pond, monitoring has been undertaken at Breamore Marsh to locate and control creeping water primrose.

Breamore Marsh was the first site at which seedling formation was confirmed in the UK. This was a very important discovery as previously it had been assumed that it was only spread through vegetative means in the UK.

The control of creeping water primrose at Breamore Marsh has attracted the interest of academic researchers and practitioners from Japan.

The work undertaken at Breamore Marsh has significantly reduced the population of creeping water primrose at this site but further work is needed to ensure it is totally eradicated.

The work undertaken between 2009 and 2019 to control creeping water primrose at Breamore Marsh demonstrates the important role of Local Action Groups to respond rapidly to reports of invasive non-native species. It also demonstrates the need to secure co-operation from the landowner and local residents. The report highlights the need for continued vigilance and regular monitoring and emphasises the need for sufficient funding to be provided to enable this key invasive species to be eradicated.

The eradication of creeping water primrose from the wild remains a top priority in the UK.

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## 1. INTRODUCTION

### 1.1. Aim of this report

This report has been prepared by Hampshire and Isle of Wight Wildlife Trust to describe the work undertaken to control the invasive non-native plant called creeping water primrose *Ludwigia grandiflora* at Breamore Marsh in Hampshire. The report draws on the experience of two Local Action Groups, namely the New Forest Non-Native Plants Project and Source to Sea.

It updates the report by Catherine Chatters titled *Control of creeping water primrose Ludwigia grandiflora at Breamore Marsh, in New Forest District, Hampshire, UK* which was prepared in 2013 on behalf of the European-funded RINSE (Reducing the Impact of Non-native Species in Europe) project (Chatters, 2013).

It also updates the report by Joanne Gore titled *Excavation of the non-native invasive species creeping water primrose from Round Pond, Breamore Marsh, Hampshire* (Gore, 2015).

### 1.2. Hampshire and Isle of Wight Wildlife Trust

Hampshire and Isle of Wight Wildlife Trust (hereafter HIWWT) is the leading nature conservation charity in the two counties of Hampshire and the Isle of Wight. With support from over 25,000 members and 1,500 volunteers, HIWWT works to protect wildlife and wild places, managing nature reserves, running education centres and offering advice to landowners and land managers. HIWWT is part of a UK-wide partnership of 46 local Wildlife Trusts, with a collective membership of more than 800,000 people working together to conserve our precious natural heritage.

### 1.3. Creeping Water Primrose

Creeping water primrose *Ludwigia* species form a group of invasive aquatic plants, native to South America. They grow rapidly and can double their biomass in 15-20 days and have become a serious pest in a number of countries, including France, Belgium and The Netherlands as they spread rapidly by vegetative fragments and have the potential to cause serious damage to the aquatic environment.

Creeping water primrose was introduced to the UK as an ornamental garden plant but is now regarded as a highly invasive non-native species detrimentally affecting semi-natural habitats. It was traded under a variety of names, including floating water primrose, primrose willow and *Jussiaea* spp. and its correct taxonomic attribution is equally confused; *Ludwigia grandiflora*, *L. hexapetala* and *L. peploides* are among the names that have been applied to it. The creeping water primrose growing at Breamore Marsh and which is the subject of this report is considered to be *Ludwigia grandiflora* (Figure 1).



**Figure 1:** Creeping water primrose *Ludwigia grandiflora*  
(Photograph: Trevor Renals)

Creeping water primrose thrives in ponds, lakes, watercourses, wet meadows and other wetland habitats. It can root in water up to 3 metres deep, with its stems and leaves floating at the surface, forming dense mats, shading deeper water plants, reducing their photosynthetic rate and reducing the amount of dissolved oxygen in the water. As well as detrimentally affecting biodiversity, the dense mats of floating vegetation can quickly block waterways, interfere with navigation and fishing and cause flooding.

As well as growing in mats on the water surface, creeping water primrose colonises seasonally-exposed bare mud. Roots and rooting stem fragments, embedded in soil or mud, send out lateral shoots that root from nodes into submerged or seasonally-exposed soils. Continued growth develops into mats of emergent vegetation, covering shallow water areas and transitional margins. The stems extend across the water surface, producing round or oval leaves. As they mature the fleshy stems grow upright and the leaves lengthen and become lanceolate, approximately 9cm in length.

Creeping water primrose is adapted to submerged or temporarily exposed soils as well as low-oxygen (anaerobic) conditions through specialised root structures which extract oxygen and nutrients from the water.

Under the Wildlife and Countryside Act 1981 (as amended) it is unlawful to plant creeping water primrose in the wild or otherwise cause it to grow in the wild. Responsibility to prevent the spread of creeping water primrose in the wild lies with the individual landowner. NB: Although Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) refers to 'floating water primrose' *Ludwigia peploides*, it is understood that, due to the taxonomic uncertainty referred to above, 'creeping water primrose' *Ludwigia grandiflora* is intended to be subject to this legislation.

During January 2013 the UK Government announced a ban on the sale of creeping water primrose which came into effect in April 2014.

Creeping water primrose is included in the list of 'invasive alien species of Union Concern' relating to Regulation (EU) No 1143/2014 on the prevention and management of the introduction and spread of invasive alien species (the 'Invasive Alien Species Regulation'). In accordance with Article 7 of this Regulation, these species of Union Concern shall not be *inter alia* intentionally placed on the market, grown, permitted to reproduce or be released into the environment. Member States shall take all necessary steps to prevent their unintentional introduction or spread.

The Invasive Alien Species (Enforcement and Permitting) Order 2019 came into force on 1 December 2019; this effectively supersedes the Wildlife and Countryside Act 2019 with regards to invasive non-native species.

Currently (as at December 2019) creeping water primrose had been confirmed at 38 sites in the 'wild' within England and from one site in the 'wild' in Wales and it is believed to have been eradicated at 15 of these 39 sites (Trevor Renals *pers comm.*).

The serious threat of creeping water primrose to watercourses and wetland habitats in the UK has been recognised by Department for Environment, Food and Rural Affairs, the statutory environmental agencies (Natural England and the Environment Agency) and the Great Britain Non-Native Species Secretariat. It is regarded as a high priority for eradication in Great Britain (Figure 2) and is subject to an Invasive Species Action Plan (August 2010) which is appended at Appendix 1 of this report. Invasive Species Action Plans are used to coordinate the response to key invasive non-native species across England, Wales and Scotland. To date, Species Action Plans have been written for 6 key species.

A report published by CABI (Williams *et al* 2010) which investigated the economic cost of invasive non-native species in Great Britain estimated the cost of eradicating current outbreaks of creeping water primrose in the wild in Great Britain as in excess of £73,000. The report recognised that removal of creeping water primrose on a single occasion is unlikely to result in its eradication and estimated that, if creeping water primrose became widespread in Great Britain, the total cost of eradication would be in excess of £241,907,565. The report emphasised that this figure should be regarded as a conservative estimate as 'complete eradication of *Ludwigia* would require a continuous effort over a longer period of time'.



# Have you seen this plant?

## WATER PRIMROSE

*Ludwigia grandiflora & Ludwigia peploides*

### What is it?

An invasive non-native plant from South America. It has become a serious pest in other countries, including France, where it smothers water bodies reducing the numbers of native species and potentially increasing the risk of flooding.



### Where might I see it?

A recent invader which has been spreading rapidly and may be found across Great Britain in ponds, lakes and slow flowing water. May be present in gardens (in which it was originally planted).

### How do you distinguish it from other plants?

- > Grows upright (image a and d) as well as a spreading form in water (image c).
- > Leaves dark green with lighter central vein, shape varies from long and thin to oval (image c, d and e).
- > Bright yellow flowers with 5 petals present July to August (image b).
- > Characteristic fruits which contain seeds (image f).

for more ID go to [www.nonnativespecies.org/02\\_Identification%20Sheets.cfm](http://www.nonnativespecies.org/02_Identification%20Sheets.cfm)



If you find this plant in the wild, in a garden or on sale, please contact:

**01208 265033**  
**[trevor.renals@environment-agency.gov.uk](mailto:trevor.renals@environment-agency.gov.uk)**

[www.nonnativespecies.org](http://www.nonnativespecies.org)

**Figure 2:** Creeping water primrose is regarded as a high priority for eradication as highlighted by this poster produced by the Great Britain Non-Native Species Secretariat

#### 1.4. The New Forest

Control and eradication of invasive non-native plants in the New Forest area (Figure 3) is a priority due to its high ecological and landscape importance. A large proportion of the New Forest area is recognised as being of national nature conservation importance through designation as Sites of Special Scientific Interest (SSSI) in accordance with the Wildlife and Countryside Act 1981 (as amended). Substantial parts of the New Forest area are regarded as being of international ecological importance through designation as Special Areas of Conservation (SAC) and Special Protection Areas (SPA) under the relevant EU Directives and as wetlands of international importance under the terms of the Ramsar Convention held in Iran in 1971.

These ecologically important habitats in the New Forest area are vulnerable to invasion by non-native plants. The control of invasive non-native plants in the New Forest area is justified by a) the high concentration of ecologically important habitats and b) the potential for habitat restoration.



Figure 3: Location of The New Forest, Hampshire

#### 1.5. The New Forest Non-Native Plants Project

The New Forest Non-Native Plants Project (NFNNPP) was set up in May 2009 to provide advice, encouragement and practical help to landowners and land managers to control invasive non-native plants in the New Forest area, particularly along watercourses and in wetland habitats.

The NFNNPP is hosted by HIWWT and funded by a partnership of local and national organisations. Currently two project officers are employed by HIWWT to liaise with landowners, raise awareness of the problems caused by invasive non-native plants and arrange for practical control work to be undertaken.

#### 1.6. Source to Sea

Source to Sea was set up in winter 2011 as a partnership between Hampshire and Isle of Wight Wildlife Trust, Wiltshire Wildlife Trust, Dorset Wildlife Trust and the Environment Agency to stop the spread of invasive non-native plants along the River Avon and its tributaries. The project included the entire River Avon catchment from its headwaters in the vale of Pewsey, downstream through Salisbury and into Hampshire to where it flows into the sea at Christchurch.



### 1.7. The Great Britain Invasive Non-native Species Strategy

Local Action Groups including the NFNNPP and Source to Sea help to implement The Great Britain Invasive Non-Native Species Strategy (DEFRA, 2015).

This Strategy highlights the problems caused by creeping water primrose and states that 'it spreads rapidly by vegetative fragments and forms dense carpets that exclude nature biodiversity, increase flood risk and siltation and degrade amenity value'.

The Strategy emphasises the importance of responding rapidly to outbreaks of creeping water primrose and states 'the total cost of water primrose eradication if it became widespread is estimated to be around £250 million. Acting now is saving many millions of pounds in later control and management costs'.

### 1.8. Breamore Marsh SSSI

Breamore Marsh lies within the catchment of the River Avon (Figure 4) and has been notified as a SSSI due to its flora associated with a number of shallow ponds.

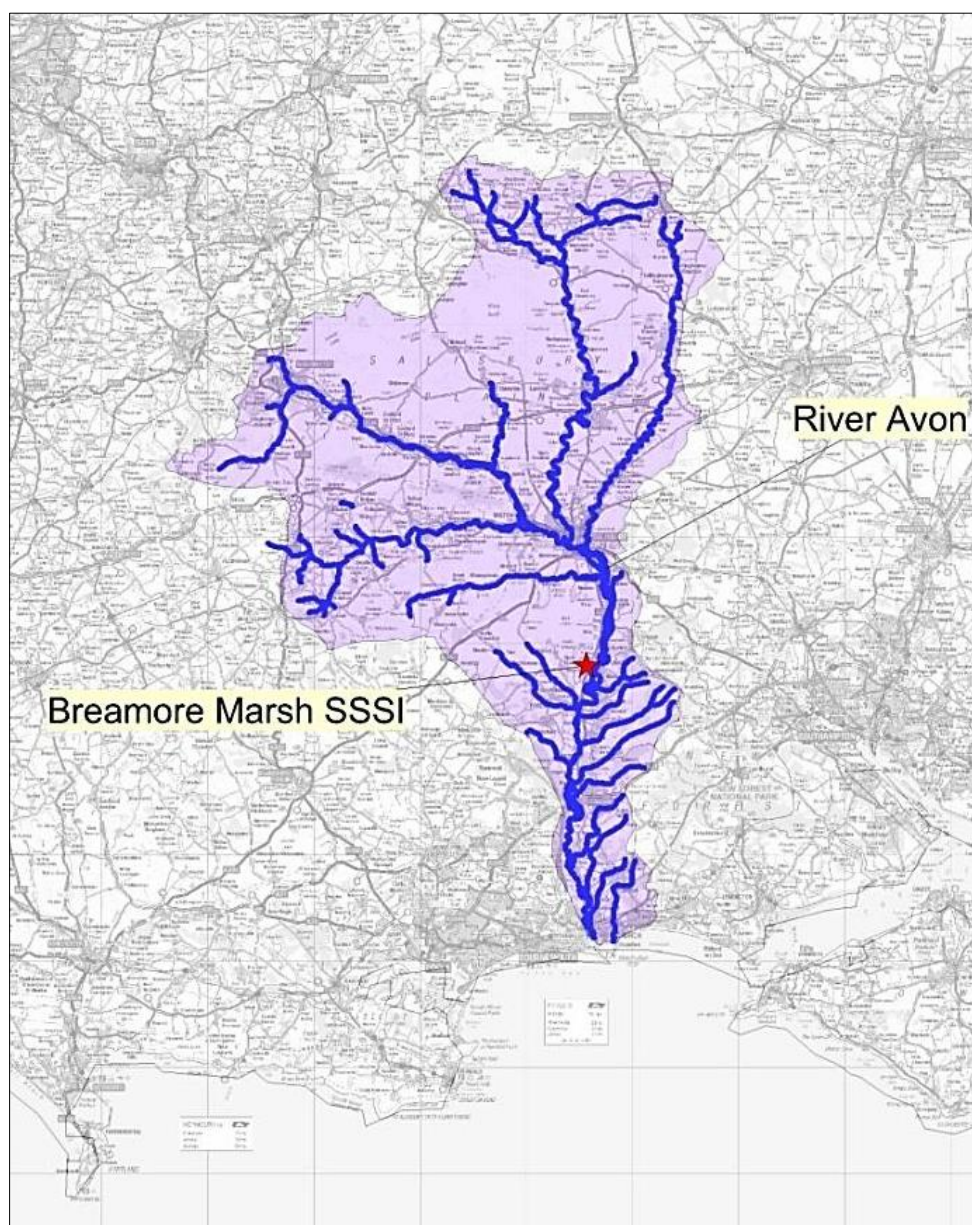


Figure 4: Location of Breamore Marsh

Breamore Marsh was first notified as a Site of Special Scientific Interest (SSSI) during 1978 in accordance with the National Parks and Access to the Countryside Act 1949 and re-notified during 1984 in accordance with the Wildlife and Countryside Act 1981 (as amended). The SSSI citation for Breamore Marsh describes this site as:

“An important surviving manorial green on which goose and cattle grazing persists. The grassland flora, whilst limited, is of interest in the extent to which its species composition has been derived from its grazing history. The marsh includes a series of shallow pools and connecting waterways which support an exceptionally rich aquatic flora. The ponds have margins of base-enriched bare mud in summers that are not excessively wet, with a near-unique assemblage of aquatic and semi-aquatic plants, including the national rarity brown cyperus *Cyperus fuscus*, common mudwort *Limosella aquatica* (which has only two or three other sites in Hampshire), and pennyroyal *Mentha pulegium*”.

Neil Sanderson, an expert botanist who was commissioned to undertake a botanical survey of the SSSI during 2013, recognised that Breamore Marsh contains a type of vegetation which is regarded as important in a European context. The EU Habitats and Species Directive recognises certain habitat types (known as ‘Annex I’ habitats) which require protection through designation as Special Areas of Conservation (SACs) and although Breamore Marsh has not been selected as a SAC:

Breamore Marsh SSSI supports one of the best developments of the *Isoeto – Nanojuncetea* aspect of the Annex I Habitats Directive habitat 3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or *Isoeto – Nanojuncetea* in Britain (Sanderson, 2013).





The Botanical Society of the British Isles (BSBI) Vice County Recorder for South Hampshire (VC 11) was immediately informed so that identification could be accurately determined and verified.

The New Forest Non-Native Plants Officer was alerted to the presence of creeping water primrose at Breamore Marsh and recognised the importance of eradicating the population at the earliest possible stage, to prevent its spread within Breamore Marsh SSSI and, potentially, into the River Avon which is designated as a SSSI, SAC and SPA (Figure 6 and Figure 7).

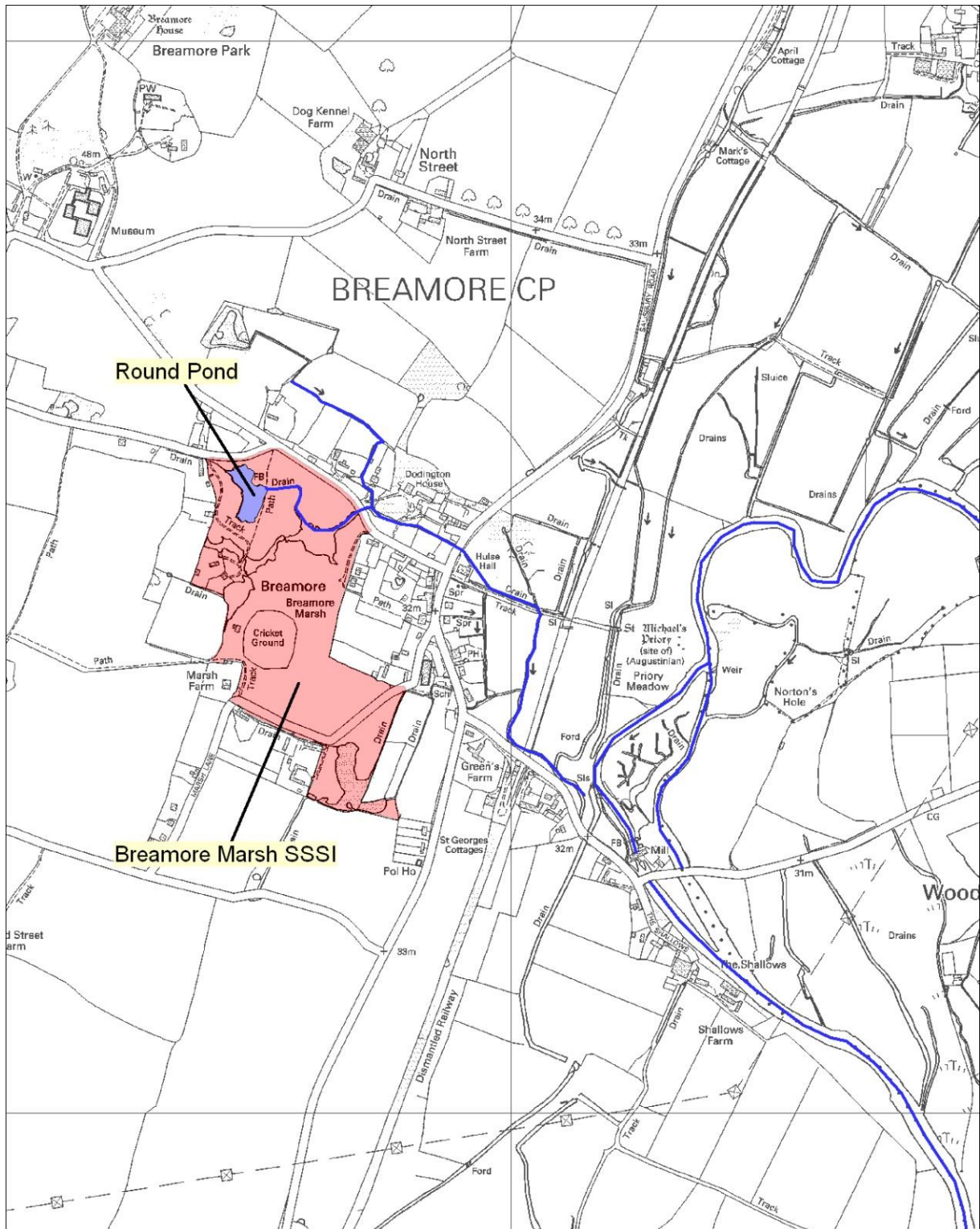


Figure 6: Map showing the watercourses linking Round Pond within Breamore Marsh to the River Avon



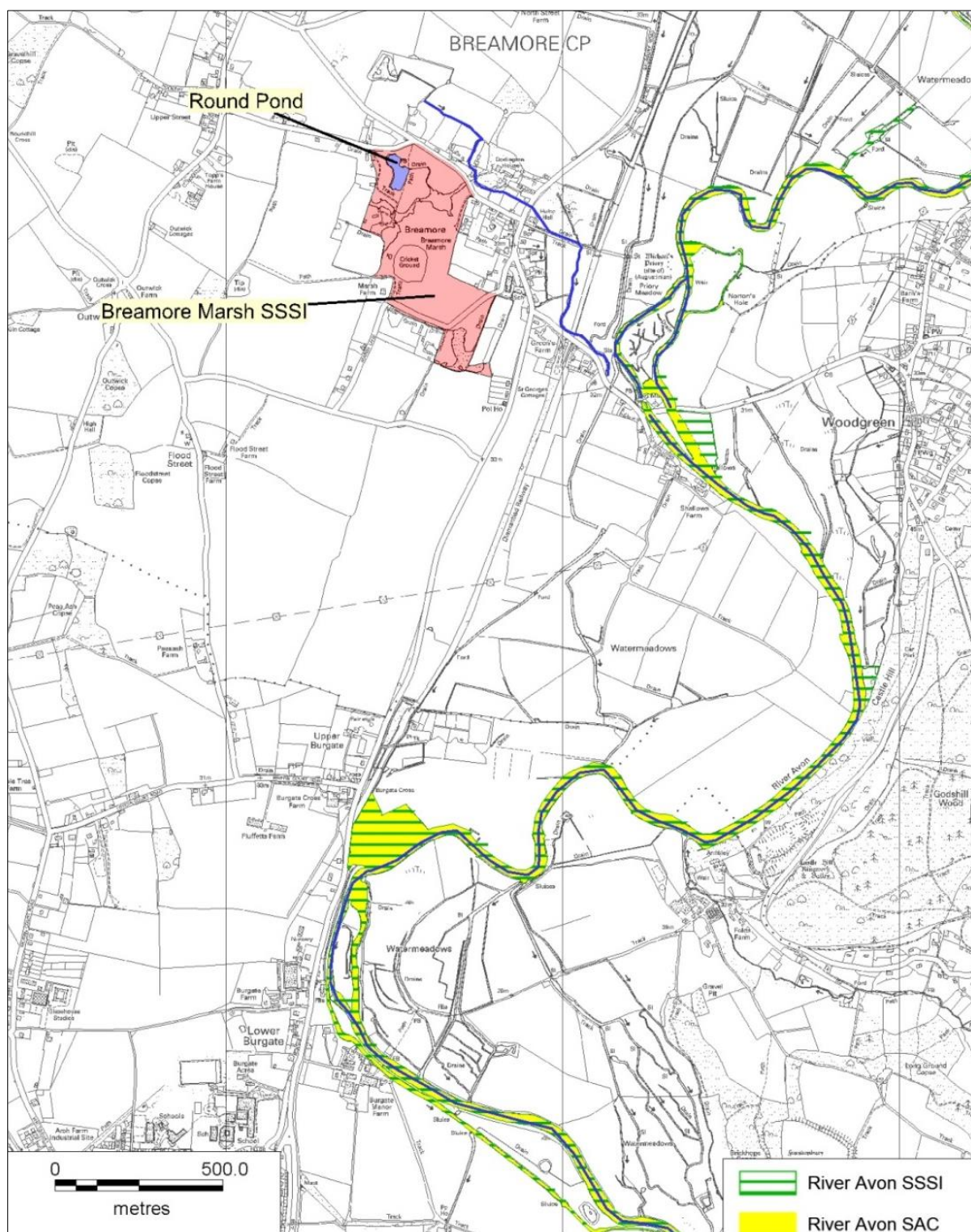


Figure 7: Map highlighting the proximity of Breamore Marsh SSSI to the River Avon SSSI/SAC/SPA

Natural England's local officer with responsibility for this area was alerted on 14 August 2009, with a request that Natural England alert the Environment Agency. Clive Chatters, the botanist who discovered the creeping water primrose at Breamore Marsh, remarked to Natural England that "The botanical interest of the pond concerned is high but ephemeral and comprises species that will readily grow from the seedbank. I would recommend comprehensive herbicide use erring on the side of eradication rather than tinkering. The water levels are low at present and there is time to eradicate these species [*Ludwigia grandiflora* and *Crassula helmsii*] before the winter wetting of the ponds and the associated floods that could move these species to the remainder of the pond complex".

On 16 August 2009 the BSBI Vice County Recorder visited Breamore Marsh to collect a sample and verify identification as *Ludwigia grandiflora*.

On 18 August 2009 the Environment Agency's invasive non-native species specialist suggested to Natural England that funding associated with the Water Framework Directive could be used to eradicate the creeping water primrose at this site and Natural England's Species Recovery Programme Manager agreed to 'mobilise' funds (up to £2,000) accordingly.

### 3. CONTROL OF CREEPING WATER PRIMROSE AT BREAMORE

#### 3.1. Control during 2009

Natural England selected Kingcombe Aquacare Ltd as an appropriate contractor to undertake herbicide treatment of the creeping water primrose at Breamore Marsh SSSI. This company had proven experience of controlling other invasive non-native aquatic plant species and was known to Natural England and the Environment Agency.

Natural England's local officer obtained a quotation dated 4 September 2009 from Kingcombe Aquacare Ltd. The covering letter stated "the *Ludwigia* responds very well to treatment using Glyphosate (Roundup Pro Biactive) and Topfilm, however there is no 'silver bullet' and it will take repeated visits to control the colonisation, yet being caught early we stand in good stead to achieve control. *Ludwigia* is still a little of a learning curve, as active control has only been happening for the last twelve months in this country, however our own treatments are working well, and now in year two we are dealing with new, smaller regrowth from nodes on the older stems, a huge reduction in biomass....One factor we discussed on site was the exclusion of grazing animals from the area; this has more to do with the effects of poaching pushing fragments of the plants under ground preventing them from being sprayed and also building up a 'cache' of propagules ready to replace those chemically controlled".

Natural England's Species Recovery Programme Manager confirmed the provision of funding for two herbicide treatments to be undertaken to control the creeping water primrose at Breamore Marsh.

Kingcombe Aquacare submitted the necessary forms to notify the Environment Agency of the intention to use an approved herbicide near water and approval was given by the EA during September 2009.

Natural England agreed to arrange for consent to be issued, in accordance with the Wildlife and Countryside Act 1981 (as amended), for herbicide treatment to be undertaken within the SSSI.

On 29 September 2009 Kingcombe Aquacare Ltd informed the New Forest Non-Native Plants Officer that (weather permitting) the first herbicide treatment was scheduled to occur during the week beginning 5 October 2009, with the second treatment being undertaken during the second week of November 2009.

On 30 September 2009 the New Forest Non-Native Plants Officer issued a Purchase Order to Kingcombe Aquacare Ltd for two herbicide treatments to be undertaken during 2009.

On 1 October 2009 the project officer visited Breamore Marsh with Trevor Renals of the Environment Agency and Sophie Thomas of Plantlife, the plant conservation charity (Figure 8).

Trevor Renals is the author of the Environment Agency's helpful publication 'Managing invasive non-native plants in or near fresh water' published in April 2010 which gives advice on control of creeping water primrose (Renals, 2010).

The creeping water primrose was dominant over large parts of Round Pond, spreading across bare mud, forming dense mats of foliage and flowering amongst other vegetation (Figure 9, Figure 10, Figure 11, Figure 12, Figure 13, Figure 14, Figure 15, Figure 16 and Figure 17).





**Figure 8:** Sophie Thomas of Plantlife with creeping water primrose at Breamore Marsh on 1 October 2009



**Figure 9:** Creeping water primrose photographed at Round Pond on 1 October 2009 (photograph: Trevor Renals)





**Figure 10:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)



**Figure 11:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)





**Figure 12:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)



**Figure 13:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)





**Figure 14:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)



**Figure 15:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)





**Figure 16:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)



**Figure 17:** Creeping water primrose photographed at Round Pond on 1 October 2009  
(Photograph: Trevor Renals)



Kingcombe Aquacare Ltd planned to undertake the first herbicide treatment on Tuesday 6 October 2009 but unfortunately the weather that day was very wet and the work had to be postponed until 29 October 2009 as herbicide treatment is only effective in dry conditions (Figure 18, Figure 19).



**Figure 18:** Scott Rice and George Hyde of Kingcombe Aquacare Ltd preparing the herbicide for treatment of creeping water primrose at Breamore Marsh SSSI on 29 October 2009. The creeping water primrose was treated with the Glyphosate-based herbicide Roundup Pro Biactive and an adjuvant called 'Topfilm'



**Figure 19:** Herbicide treatment being undertaken at Breamore Marsh on 29 October 2009

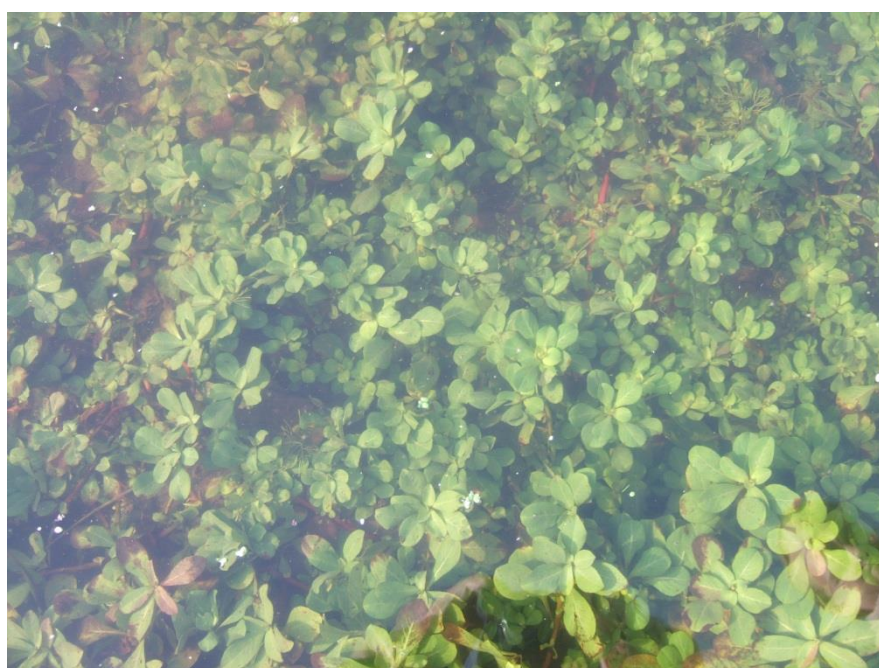
On 19 November 2009 the New Forest Non-Native Plants Officer and a representative of Plantlife visited Round Pond to mark out the creeping water primrose which required further herbicide treatment. 'Flags' made from red adhesive tape were attached to the top of garden canes to mark out areas where further herbicide treatment was necessary (Figure 20). Although some patches of creeping water primrose had clearly been affected by the herbicide treatment, there was evidence of fresh, new growth from many of these patches.





**Figure 20:** Sophie Thomas of Plantlife at Breamore Marsh on 19 November 2009 marking out areas where more herbicide treatment is required

Although there was no rain for the 24 hour period immediately following the herbicide treatment undertaken on 29 October 2009, there had since been a lot of rain so areas which were bare mud or terrestrial vegetation at the time of the herbicide treatment were under water on 19 November 2009. By 19 November 2009 the vast majority of the creeping water primrose was submerged (Figure 21).



**Figure 21:** Creeping water primrose *Ludwigia grandiflora* leaves submerged on 19 November 2009

The New Forest Non-Native Plants Officer asked Kingcombe Aquacare Ltd to select a suitable date (depending on weather conditions) for a second herbicide treatment during 2009. On 24 November 2009 the contractors informed the project officer that a second treatment was planned for 26 November 2009 but the weather forecast was not favourable. The contractors regarded the treatment of the creeping water primrose as a high priority and stated that 'as soon as the weather breaks' they would arrange a day to undertake the second treatment.

The contractors advised that "Once the *Ludwigia* and *Crassula* are submerged there really is very little we can do...we can still treat anything exposed or clear of the water...The *Ludwigia* should start dying back as soon as we get some colder weather; it does survive the winter but only just! Therefore I think it would be a good idea to try and hit it as early as possible next year as soon as a) the weather allows and b) the plants show signs of starting to grow, probably in late May. If we have everything in place by then, we should have the whole summer to maximise the control".

On 4 December 2009 the contractor visited Breamore Marsh to assess the water levels and determine whether further herbicide treatment would be feasible during 2009. He explained "The water level is now right up (probably 2-3" flowing out) and there was even a good cover of ice! We saw your flags and looked around them and could see...some small examples of *Ludwigia*. The *Ludwigia* did not look in the best of condition so I would think the cold weather is starting to have an effect on this however everything we saw was underwater making it impossible to treat. I think it would be good to keep the areas marked if practicable and as soon as the water drops we can look at getting the second treatment on. We are happy to be as flexible as we can, you probably know the site better than I, is the water level likely to drop given a sensible dry spell? If we can stay in touch and keep an eye on water levels we can get the second spray on. Even if it's early in the spring it will still be worthwhile even if the effects take longer to show, because of the slower plant metabolism. Let's hope the monsoon season stops soon and we at least get a really cold dry winter; it all helps!"

The project officer sought advice from Clive Chatters the local naturalist who had originally discovered the creeping water primrose at Breamore Marsh. He had visited the site annually since the 1980s to monitor the *Cyperus fuscus* and explained that, in his experience, water levels at Round Pond would be unlikely to fall until at least May the following year. In the circumstances, the project officer and Natural England agreed to postpone any proposals for further herbicide treatment until spring/summer 2010 and the project officer removed the marker canes from Round Pond.

### **3.2. Control during 2010**

During January 2010 the project officer asked the contractors to quote for herbicide treatment during spring 2010 when water levels had fallen sufficiently. Natural England agreed to arrange for further funding to be available for herbicide treatment to be undertaken and the project officer asked Natural England to arrange for consent (for herbicide treatment within the SSSI) to be issued to the landowner in accordance with the Wildlife and Countryside Act 1981 (as amended).

On 3 February 2010 the project officer received the quotation. The contractors recommended 'a minimum of two visits over the course of the season and preferably three or four'. On 14 February 2010 the project officer commissioned the first herbicide treatment of 2010 and stated 'it is likely that water levels will be too high to undertake the treatment until May 2010 but even this might be too early in the year. I will keep you informed regarding water levels so we can agree a suitable time of year for the work to be undertaken'. The project officer asked the contractors to complete and submit the necessary paperwork to notify the Environment Agency of the intention to use an approved herbicide near water.

Water levels did not fall sufficiently until August. Herbicide treatment was planned for 6 August 2010 but, due to an unfavourable weather forecast, it was postponed until 9 August 2010. As rain was predicted, the contractors arrived at the site early and finished the treatment by early afternoon. The contractors advised the project officer that the full effect of the herbicide treatment would be observed two to three weeks following application and that it would then be appropriate to schedule the next herbicide treatment during early September 2010.

During May 2010 Joanne Gore of HIWWT joined the New Forest Non-Native Plants Project as a Project Officer and became the Wildlife Trust's main point of contact for the control of the creeping water primrose at this site.

During 2010 the Project Officer discussed various treatments methods with Natural England. Cutting was suggested to reduce the amount of rush *Juncus* spp present in the pond as the rush cover had made spraying difficult in the past and had allow creeping water primrose to survive sufficiently to start re-sprouting. However this suggestion was dismissed as a) it would be very difficult to cut the



vegetation until the pond was dry enough and b) there was a risk of spreading the creeping water primrose further as a result of the cut fragments being flung around the pond.

The possibility of mechanical dredging of the pond was discussed to physically remove the creeping water primrose but concern was expressed by Trevor Renals of the Environment Agency that this may lead to compaction on the sensitive SSSI.

During August 2010 Natural England indicated that 'special project' funding would be provided through the Higher Level Stewardship agreement for Breamore Marsh SSSI for a further two herbicide treatments during 2010 and for herbicide treatment in 2011 and 2012.. The Project Officer issued a purchase order for the second herbicide treatment of 2010.

Clive Chatters, who had first discovered the creeping water primrose at Breamore Marsh, visited the site and observed lots of creeping water primrose growing amongst the rushes *Juncus* spp. In early September the contractors contacted HIWWT to confirm that they were planning to undertake the herbicide treatment and agreed to treat Round Pond thoroughly (by walking through the site in 'transects') to ensure comprehensive treatment of all the *Ludwigia*, including those plants growing amongst the rushes.

By mid September 2010 Round Pond remained dry and the second herbicide treatment of 2010 was undertaken on 16 September. A purchase order was issued on 29 September 2010 and the third treatment that year was undertaken on 15 October 2010. Throughout the treatment season the Project Officer made visits every two weeks to Round Pond and was very pleased at the reduction in the amount of creeping water primrose.

A volunteer working party was arranged and led by the Project Officer on 3 November 2010 to hand-pull remaining plants to help raise awareness of the problems caused by this invasive non-native plant (Figure 22). Posters were displayed around Breamore Marsh and leaflets were delivered to a number of nearby houses. Two local residents volunteered to help the Project Officer and in two hours (six 'man-hours') they had filled six refuse sacks. On arrival at the site, the initial impression was that the herbicide treatment had effectively killed all the creeping water primrose but when a dead-looking stem was pulled up and scraped, it was apparent that it was still alive. Some creeping water primrose plants were sprouting where they had disappeared out of view under rushes *Juncus* spp. Effort was focussed on the area near the outlet.



**Figure 22:** Local residents helped the Project Officer hand-pull *Ludwigia grandiflora* at Round Pond on 3 November 2010 (Photograph: Joanne Gore)

Following the volunteer work party the Project Officer concluded that hand-pulling was probably an effective method to help check the spread of the creeping water primrose in the vicinity of the outlet but considered that more drastic measures, such as scraping out the pond, would be required to eradicate the creeping water primrose. It appeared that the herbicide treatment undertaken at Round Pond had effectively killed creeping water primrose plants in areas where there was no rush *Juncus* spp; the project officer therefore considered that scraping out the pond would help increase the effectiveness of future herbicide treatments as a reduction in rush cover would increase the amount of chemical coming into contact with the creeping water primrose foliage. If the rush-dominated vegetation could be removed, any creeping water primrose plants which had not been killed by the herbicide treatment could then be more easily seen and controlled with a regular hand pull.

### 3.3. Control during 2011

HIWWT were intending to trial the use of aquatic dye to eradicate New Zealand pygmyweed *Crassula helmsii* in New Forest ponds and sought advice from Dr Jonathan Newman of Waterland Management Ltd during February 2011 regarding the likelihood of aquatic dye being an effective method to control creeping water primrose in Round Pond. Dr Newman did not consider aquatic dye to be an effective potential method for eradicating creeping water primrose as he considered it would respond to aquatic dye treatment by growing to the surface and becoming emergent. Dr Newman advised using 2,4-D amine on the floating 'rosette type' leaves at a concentration of 9 litres/hectare of product ('Depitox').

The Project Officer decided to continue with the glyphosate herbicide treatment using Roundup Pro Biactive and the adjuvant 'Topfilm' and proposed three herbicide treatments during August, September and October 2011.

By the beginning of August the water level in Round Pond had fallen, exposing the creeping water primrose and a date was set for the first treatment to take place in the first week of August.

On 18 August 2011 torrential rain was experienced in Hampshire and when Clive Chatters visited Breamore Marsh on 19 August, in the hope of undertaking his annual survey of *Cyperus fuscus*, the water levels were far too high for herbicide treatment to be undertaken and he considered that 'a rather brutal approach' would be needed to control the creeping water primrose in Round Pond and prevent its spread. (Figure 23)



**Figure 23:** Torrential rain fell in Hampshire on 18 August 2011. When this photograph was taken on 19 August 2011 water levels in Round Pond were uncharacteristically high for this time of the year.

Martin Rand, BSBI Vice County Recorder visited Breamore Marsh on 21 August 2011 and observed that the creeping water primrose was 'dominating tracts' of the south and west parts of the pond and 'although plants are still young and non-flowering' their vigour looked undiminished. Although the creeping water primrose was not covering the area where it had been most extensive during 2009 and 2010, he considered it had the potential to do so if not treated within the following few weeks. He offered to assist with hand-pulling during 2011 and wondered 'whether a hand-pull on a small contained site like this might be the most effective strategy'.

The unfavourable weather conditions prevented any herbicide treatment being undertaken during August 2011 and it was then not possible for the pond to be treated until September. By this time, the warm wet summer weather had caused an explosion in the creeping water primrose population. However due to the drier weather earlier in the season only one or two upright flowering stalks were seen.

The first chemical treatment of the pond during 2011 took place on 16 September using Roundup Probiactive with 'Topfilm' as the adjuvant; further treatments were undertaken on 5 October and 28 October.

The Project Officer organised and led a volunteer work party to hand-pull the creeping water primrose on 1 November 2011. The work party was advertised on the notice board in a local village shop and a local resident also advertised the event in the parish magazine. A total of seven volunteers attended including Martin Rand the BSBI Vice County Recorder, a representative of the Environment Agency and five local residents who live adjacent to Breamore Marsh.

A total of forty refuse bags of creeping water primrose were removed. The Project Officer considered that hand pulling after the chemical treatment was very effective. At least 50% of Round Pond was tackled by the work party during November 2011 and hand-pulling was undertaken in the water where the pond had started to refill.

### **3.4. Control during 2012**

During 2012 Source to Sea was initiated by Wiltshire Wildlife Trust as a collaborative project to stop the spread of invasive non-native plants in the River Avon catchment and from May 2012 Joanne Gore worked as a Field Officer with Source to Sea, whilst continuing to be employed by HIWWT. Further work to control the creeping water primrose at Breamore Marsh was organised by Joanne through Source to Sea until the end of March 2015.

Herbicide treatments, combined with hand-pulling, were planned for 2012. However, during summer and autumn 2012 Hampshire experienced very high rainfall and consequently the water level in Round Pond was too high for any herbicide treatment to be undertaken that year. The following photographs, taken at Breamore Marsh on 9 September 2012, indicate the height of the water and the growth of the creeping water primrose (Figure 24 and Figure 25).

The lack of herbicide treatment during 2012 allowed the creeping water primrose to grow profusely (Figure 26)

Creeping water primrose is adapted to submerged or temporarily exposed soils as well as low-oxygen (anaerobic) conditions through the presence of two distinct specialised root structures which extract oxygen and nutrients from the water. Porous, upward-growing aerenchymous roots, sometimes referred to as pneumatophores, aid its survival in anaerobic, muddy conditions and function as a conduit for the transfer of atmospheric gases. Downward-growing adventitious roots (arising from the stem) absorb nutrients in the water column, often without contact with the substrate.

During 2012 the creeping water primrose plants in Round Pond developed pneumatophores which provide a conduit for atmospheric gases to be transferred throughout the plant in anaerobic conditions (Figure 27).





**Figure 24:** Round Pond on 9 September 2012.



**Figure 25:** Round Pond on 9 September 2012. Water levels remained too high for herbicide treatment to be undertaken during 2012.





**Figure 26:** profuse growth of creeping water primrose photographed on 9 September 2012



**Figure 27:** Photograph taken on 9 September 2012 showing a) the white, porous upward-growing aerenchymous roots (pneumatophores) and b) the downward-growing adventitious roots (arising from the stem) which absorb nutrients in the water column, often without contact with the substrate.



### 3.5. Control during 2013

The funding available for 'special projects' under the Breamore Estate's Higher Level Stewardship agreement had been due to expire in 2012 but, because the water level in Round Pond was too high during 2012 for any herbicide treatment to be undertaken that year, Natural England agreed to carry these funds forward to 2013. However, due to herbicide treatment being so weather-dependent, it was decided that a new approach was needed to control the creeping water primrose at Breamore Marsh.

Natural England asked the Project Officer to obtain quotes from contractors for mechanical removal of the creeping water primrose, using matting to protect the SSSI from compaction.

HIWWT invited Johan van Valkenburg of The Netherlands Plant Protection Service (one of the partners in the RINSE Project as described in section 8 of this report) to visit Breamore Marsh on 21 March 2013 to give advice on eradicating the creeping water primrose (Figure 28).



**Figure 28:** 'Source to Sea' Project Officer Joanne Gore (third from right) with Johan van Valkenburg of The Netherlands Plant Protection Service (third from left) *et al* by Round Pond at Breamore Marsh discussing control of creeping water primrose on 21 March 2013

Johan referred to useful advice prepared jointly by The Netherlands Plant Protection Service and the Centre for Ecology and Hydrology which was available at [http://www.q-bank.eu/Plants/Controlsheets/Ludwigia\\_grandiflora\\_office\\_guide.pdf](http://www.q-bank.eu/Plants/Controlsheets/Ludwigia_grandiflora_office_guide.pdf)

This advice available at [www.q-bank.eu](http://www.q-bank.eu) referred to a number of management techniques including mechanical excavation and dredging, chemical control, biological control and environmental control.

Johan noted that although Breamore Marsh is grazed by domestic geese and cattle, elsewhere in Europe grazing by cattle or wild geese has not had an impact on creeping water primrose. Johan noted that although herbicide treatment had been undertaken to control creeping water primrose in Round Pond on a number of occasions, this had not been effective. Creeping water primrose growing

amongst taller vegetation had been 'protected' from the herbicide treatments. The high water levels had delayed or prevented some of the scheduled herbicide treatments being undertaken.

He referred to an example in The Netherlands where a site infested with creeping water primrose had been excavated to a depth of 30cm; the contaminated soil was then buried under 'clean' soil to a depth of 1 metre in a hole which had been dug nearby.

In the light of his experience, Johan recommended that successful eradication of the creeping water primrose at Breamore Marsh would necessitate dredging Round Pond to a depth of 30cm and disposing of the excavated material.

Initially, Johan suggested that half of Round Pond could be dredged, followed by manual-pulling and herbicide treatment, and the remaining half of the Pond dredged the following year. However it was noted that by dredging half of the Pond, this would create ideal conditions for the spread of creeping water primrose and the *Crassula helmsii* which is also present in Round Pond. Martin Rand, the Botanical Society of the British Isles Vice-County Recorder for South Hampshire was present at the site visit and advised that no *Cyperus fuscus* (and no other rare, scarce or notable plants) occurred in Round Pond. Johan therefore concluded that dredging the entire Pond in a single operation would be preferable to a phased approach.

Advice provided by Johan van Valkenburg during site visit on 21 March 2013:-

- remove bushes and brambles growing around the margin of Round Pond (as such vegetation is likely to be harbouring creeping water primrose) and spot-treat any creeping water primrose (revealed after the removal of the bushes and brambles) with herbicide;
- excavate Round Pond to a depth of 30cm during July (prior to growth of creeping water primrose accelerating during August and September), taking extreme care to avoid inadvertently spreading fragments of creeping water primrose during the dredging operation;
- bury contaminated soil and vegetation on site.

Although burial of contaminated soil and arisings on site would significantly reduce the cost of disposal of the arisings, it was noted that burying the excavated material on site might not be realistic due to the impact on the Site of Special Scientific Interest, aesthetic considerations and the attitude of the landowner and local residents.

Consideration would need to be given to identifying a suitable site to dispose of the excavated material.

Johan emphasised the need for biosecurity during the dredging operation and during the disposal of arisings to prevent fragments of vegetation causing further contamination. He also stressed the need for the person undertaking the dredging to work meticulously to ensure that all fragments of creeping water primrose are removed from Round Pond; he stated "a job half done is no good whatsoever; if you do anything you have to do it rigorously".

Following the site visit on 21 March 2013 consideration was given to the need to:

- continue with herbicide treatment during 2013 (as feasible, depending on water levels in late summer/early autumn 2013);
- investigate the feasibility of dredging Round Pond during 2013;
- explore proposals for dredging and disposal of arisings with landowner, local residents and relevant statutory authorities (Natural England, Environment Agency and local planning authority);
- secure necessary permits, authorisations, consents from relevant statutory authorities;
- secure necessary funding.

With funding from Natural England Joanne Gore arranged for Neil Sanderson to undertake a botanical survey of the ponds on Breamore Marsh (Sanderson, 2013). The survey was undertaken during July and August 2013 to provide a baseline prior to the proposed excavation of Round Pond. The survey revealed that vegetation dominated by creeping water primrose and New Zealand pygweed *Crassula helmsii* had displaced mud annual communities. (Figure 29 and Figure 30).





**Figure 29:** Round Pond photographed during July 2013 showing vegetation dominated by creeping water primrose and New Zealand pygmyweed that had displaced mud annual communities. (Photograph: Neil Sanderson)



**Figure 30:** Creeping water primrose in Round Pond during July 2013 (Photograph: Neil Sanderson)

During summer 2013 meetings were held with the landowner and farm manager to discuss the proposal to excavate Round Pond and to identify potential sites to dispose of the arisings. Site visits were undertaken to calculate the amount of material that would need to be excavated from the pond,

to consider whether the pond was suitable for the great crested newt (a protected species) and to ascertain whether an application for Ordinary Watercourse Consent would need to be submitted to Hampshire County Council (as Lead Local Flood Authority) in accordance with the Land Drainage Act, 1991. It was concluded that Ordinary Watercourse Consent would not be required. At this stage HIWWT Ecology staff were of the opinion that Round Pond was unsuitable as a habitat for great crested newts.

Three potential disposal sites were identified. All three sites were within the same ownership as Breamore Marsh SSSI.

Two of these sites were rejected due to their distance from Breamore Marsh (a ten minute drive along the A338) because of the increased transport costs and the risk of contamination. Furthermore, the landowner had already placed orders for seed and fertiliser for use in one of these fields during 2014.

The third site was a small field containing a disused quarry a short distance from Breamore Marsh. The field was in cultivation but would have been harvested before the excavation work was due to be undertaken. This site was selected as the preferred option as it presented the least risk of contamination/inconvenience and the transport costs would be lowest due to its proximity to Breamore Marsh.

A meeting was held in July 2013 with the Environment Agency to view the potential disposal sites and site meetings were held in July and September 2013 to obtain quotes from contractors.

On 9 October 2013 the Environment Agency wrote to HIWWT to confirm that the proposal to spread the arisings on the field (to confer benefit to the agricultural land) had been registered as 'exempt' under The Environmental Permitting (England and Wales) Regulations 2010.

It became apparent that it would be too late in the season for any mechanical excavation to be undertaken during 2013 as there were still numerous questions that needed to be answered. Also, there was uncertainty about whether the funds would still be available to pay for the excavation. Because of these uncertainties and the change in the weather, the Project Officer issued purchase orders for two herbicide treatments which were undertaken on 24 September and 16 October 2013. The funds for the excavation work were rolled over to the following year.

### **3.6. Control during 2014**

It became apparent that the waste exemption which had been granted by the Environment Agency during October 2013 to allow for the excavated material to be spread on the selected field would not be adequate as the field was not large enough to fulfil the waste exemption conditions. The Project Officer therefore approached the Environment Agency and suggested that instead of spreading the arisings on the field, they could be put in the existing hollow.

This approach would be advantageous as a) the field would not have to be taken out of cultivation for one to two years to prevent fragments of creeping water primrose spreading to other areas on the wheels of agricultural machinery and b) it would avoid the biosecurity risk posed by wet areas which had formed within the field during Spring 2013. However if the arisings were to be disposed of in the hollow rather than being spread on the field, the work could not be undertaken in accordance with the waste exemption. An application for an environmental permit would have had to be submitted to the Environment Agency which would have cost many thousands of pounds and would have taken a significant amount of time to organise.

To overcome this problem, Trevor Renals, the Environment Agency's Chief Technical Adviser, successfully instigated a change of policy at a national level within the Environment Agency regarding disposal of material that contains invasive non-native species such as creeping water primrose. (This change of policy led to the Environment Agency's Regulatory Position Statement 178 'Treatment and disposal of invasive non-native plants: RPS 178'). This change of policy enabled the staff at the Environment Agency's local office to issue a Local Enforcement Decision a copy of which is given at Appendix 2. Local Enforcement Decisions are applied on a case-by-case basis. It was then possible for the arisings to be disposed of in the hollow without the need for an environmental permit.

As the excavated material was now to be regarded as waste, it was necessary to apply for planning permission from Hampshire County Council. A number of reports were required to accompany the planning application; these included a topographical survey, arboricultural report, soil analysis, ecological appraisal of the hollow and a supporting statement. The application was submitted on behalf of HIWWT by David Cutler, a planning consultant, and planning permission (reference 14/11272) was granted on 28 October 2014.

Consent was granted by Natural England on 8 September 2014 in accordance with the Wildlife and Countryside Act 1981 for the proposed excavation of material from Breamore Marsh SSSI.

An evening meeting was held on 4 September 2014 to discuss the proposed excavation work and to explain the importance of Breamore Marsh SSSI. The meeting was attended by over 20 people including local residents, the landowner and representatives of HIWWT and Natural England.

During 2013 a site visit had been undertaken to assess Round Pond as a suitable habitat for the great crested newt which is a protected species. This appraisal had concluded that Round Pond would not be suitable for great crested newts due to its ephemeral nature as it dries out each year. During 2014 Hampshire & Isle of Wight Wildlife Trust's Ecology Team decided to undertake a survey of the ponds on Breamore Marsh to determine the presence of great crested newts and the invasive non-native signal crayfish.

Although no signal crayfish were found, a small population of great crested newts was present. It was therefore necessary to apply for a licence to translocate the great crested newts. The licensing process usually takes at least 60 days but Natural England fast-tracked the process and the licence was granted in less than 30 days.

Prior to the newt translocation, a fence had to be erected. To reduce costs, this was done in-house by Wildlife Trust staff and volunteers from Blashford Lakes Education Centre. The 380m fence and translocation buckets (pitfall traps) were installed between 9 and 11 September 2014 (Figure 31).

The great crested newt translocation began on 12 September 2014.

The site was visited twice a day to check for the presence of newts (Figure 32). All caught newts were removed from the pitfall traps and re-located around Long Pond approximately 80 metres to the south east of Round Pond. It was necessary to have 5 clear days without finding newts (ie 5 'zero capture days') after 30 days following the start of the translocation. If the overnight temperature dropped below 5 degrees centigrade then that day did not count and if a great crested newt was found then that day was also discounted. The translocation exercise was completed on Friday 24 October 2014 (due to 9 nights when the temperature was below 5 degrees centigrade) only three days before the contractors were due to begin the excavation on the following Monday morning (Jackson, 2014).

Prior to the excavation work, Wildlife Trust staff and volunteers cleared areas of bramble from the edge of Round Pond between 20 and 22 October 2014 to facilitate access for the contractors and reduce the likelihood of creeping water primrose being hidden by scrub.

During 2013 a number of contractors had been asked to quote for the excavation work. Quotes varied widely ranging from £27,000 to over £85,000. In summer 2014 one of the contractors was instructed to undertake the work but unfortunately due to delays and the uncertainty regarding the start date, that contractor pulled out and an alternative contractor had to be found. A further three contractors were asked to quote. Aquascience Ltd was commissioned to undertake the excavation as this company had experience of invasive non-native species eradication and demonstrated a sound awareness of the need for biosecurity.

Excavation began on 27 October 2014 and fortunately the weather was favourable. Usually Round Pond is at its driest during August but in 2014 it was at its driest during the first week of October.

The excavation was undertaken over a period of 12 days and was completed on 11 November 2014. Every effort was taken to minimise the impact on local residents so work was undertaken only on week days between 8am and 5pm. All the work had to be undertaken within the confines of the newt translocation fence.





**Figure 31:** Wildlife Trust staff and volunteers installing the fence around Round Pond (Photograph: Sarah Jackson)



**Figure 32:** Great crested newt caught during translocation (Photograph: Sarah Jackson)

Using a long-reach excavator the silt was removed to the gravel bed (to an average depth of 30cm and deposited at the edge of the pond to dry. The driest end of the pond was excavated first and the arisings were heaped at the edges; this allowed water to drain down from the wetter end of the pond which was then excavated.

The arisings were collected by a wheeled dumper and a mini digger. During this process the edges of the pond were scraped back by 1m to ensure that any remnants of creeping water primrose growing in the marginal vegetation were removed. The material was piled in an area at one end of the pond. A small bund was created, behind which the arisings were piled, ready to be removed to the disposal site. This allowed for further drying of the excavated material.

A platform of sleepers and mesh was created as a turning area to minimise the impact of the tractor and trailer on the SSSI. This also ensured that the wheels of the tractor did not come into contact with contaminated material which could have been transported out on to the road. The arising were transported by a tractor and sealed trailer to the disposal site. To increase efficiency, a tracked dumper and another long-armed excavator were brought in to speed up the collection of the silt to the point where it was being loaded into the trailer. This reduced waiting times and kept the works on schedule (Figure 33, Figure 34, Figure 35, Figure 36).

Exactly 100 trailer loads of arisings were transported to the disposal site. At the end of each day the road was swept to remove any mud which had dropped from the wheels of the tractor. The entrance in the fence was reinstated each evening to ensure that any protected species did not enter the working area.

Whilst material was being excavated from Round Pond, the contractors were also preparing the disposal site. A mini digger was used to create a bund to protect nearby trees and to ensure that the arisings remained within the hollow to reduce the biosecurity risk.



**Figure 33:** Excavation of Round Pond during Autumn 2014 (Photograph: Joanne Gore)





**Figure 34:** Excavation of Round Pond during Autumn 2014 (Photograph: Joanne Gore)



**Figure 35:** Excavation of Round Pond during Autumn 2014 (Photograph: Joanne Gore)





**Figure 36:** Excavation of Round Pond during Autumn 2014 (Photograph: Joanne Gore)

At the end of the excavation all machinery was thoroughly washed down before leaving the site. The work resulted in a small area of compaction on the edge of the SSSI (Figure 37).



**Figure 37:** Small area of compaction on edge of Breamore Marsh SSSI (Photograph: Joanne Gore)

Whilst visiting Breamore Marsh during 2014 the Project Officer decided to survey the connecting ditch and discovered plants which she believed to be creeping water primrose growing there. She immediately contacted Martin Rand (VC 11 Vice County Recorder) who visited the site and confirmed identification as creeping water primrose. Consent was issued by Natural England for the plants to be controlled by hand pulling. The ditch was then re-visited on a regular basis.

### **3.7. Control during 2015**

The capping of the disposal site (to fulfil the conditions of the Local Enforcement Decision and the planning permission) could not take place immediately after the excavation work was completed, due to unfavourable ground conditions. The disposal site was capped on 5 and 6 February 2015 during a period of frosty weather which facilitated access to the field and avoided rutting. Material which had been scraped from the site was used to cap the hole to a depth of at least 20cm (Figure 38 and Figure 39).



**Figure 38:** Capping the disposal site during February 2015  
(Photograph: Joanne Gore)



**Figure 39:** The disposal site after capping (Photograph: Joanne Gore)

The use of the road by the tractor and trailer caused some damage which needed to be repaired. A purchase order for the repair work was issued before Christmas 2014 but the contractor did not arrive. Another contractor was found but wet weather and icy conditions delayed the work. The road repairs were eventually undertaken on 19 February 2015.

On 23 February 2015 the Project Officer and her colleague Ed Bennett burnt the brash which had been cut prior to the excavation. The fire sites were tidied up the following day and the ash was removed.

Since the excavation work, regular surveillance has been undertaken by the Project Officer to remove any floating fragments of creeping water primrose. The screen which had been installed to prevent plant fragments flowing from the pond was changed on a weekly basis to ensure that water flow was not impeded.

### **3.8. Control during 2016**

During 2016 the Project Officer visited Breamore Marsh to monitor and remove creeping water primrose:

- 9 June 2016 – the amount of creeping water primrose which was found on 9 June in Round Pond filled a horse feed tub (Figure 40). The plants were mainly seedlings or rooted fragments. Any larger plants (of which there was a minimal amount) were dug up with a trowel.
- 7 July 2016 - the amount of creeping water primrose which was found on 7 July in Round Pond filled approximately one third of a horse feed tub. No creeping water primrose was growing in the centre of Round Pond; the only creeping water primrose plants found were mainly seedlings or plants growing from fragments washed up on the margins of the pond. The occasional more deeply-rooted plant was removed with a trowel.
- 23 August 2016 – the Project Officer visited Breamore Marsh with a volunteer who discovered creeping water primrose also growing in an adjacent pond (referred to as Lower Pond). The patch in Lower Pond was approximately 2 x 3 metres which was too large for it to be removed in its entirety. In the circumstances plants were removed from the outer edge of the patch (Figure 41).
- 8 September 2016 - during inspection with a contractor two further similar-sized patches of creeping water primrose and a few isolated plants were found in Lower Pond.
- 15 September 2016 – 3 seedlings and one patch approximately 30cm x 30cm were removed from Round Pond by hand pulling. Herbicide treatment was undertaken in Lower Pond on three patches of creeping water primrose, each approximately 2m x 3m. A few individual plants of creeping water primrose found in the ditch flowing from Lower Pond towards the road were removed by hand or treated with herbicide. One plant of creeping water primrose was found in the ditch which connects Round Pond to Lower Pond.
- 21 October 2016 – herbicide treatment in Lower Pond.
- 3 November 2016 – hand-pull in Round Pond.





**Figure 40:** Horse feed tub used to collect creeping water primrose during monitoring visits to Breamore Marsh (Photograph: Joanne Gore)



**Figure 41:** Volunteer Brian Matthews hand-pulling creeping water primrose in Lower Pond on 23 August 2016 (Photograph: Joanne Gore)



### 3.9. Control during 2017

During 2017 the Project Officer visited Breamore Marsh to monitor and remove creeping water primrose:

- 18 May 2017 – 5 small stalks of creeping water primrose found in Round Pond. The water level was too high for Lower Pond to be checked effectively. Areas treated with herbicide in 2016 appeared to have responded well with little or no re-growth.
- 2 June 2017 – Project Officer had a site meeting with Environment Agency staff who were pleased that the vegetation in Round Pond had recovered so well after the excavation work in 2014. There was plentiful toad and frog spawn. Moorhens were nesting on the pond and there were numerous dragonfly species using the pond. Clive Chatters had reported that the brown galingale populations had greatly improved, with a quick count revealing at least 50 individual plants. In previous years the annual surveys had revealed populations of only one or two plants and for many years brown galingale had been absent from Round Pond. Five 'small sprigs' of creeping water primrose were found in Round Pond; 3 or 4 'strands' of creeping water primrose were found in Lower Pond but the Project Officer was unable to reach them due to muddy conditions.
- 8 June 2017 – boards were used to walk across the mud to hand pull creeping water primrose in Lower Pond (Figure 42, Figure 43, Figure 44 and Figure 45).
- 29 June 2017 – 2 'sprigs' of creeping water primrose found in Round Pond. 6 'small strands' found in Lower Pond.
- 20 July 2017 – no creeping water primrose found in Round Pond but a few 'sprigs' were found in Lower pond.
- 3 August 2017 – a 'few small sprigs' of creeping water primrose were found in Round Pond. No creeping water primrose found in Lower Pond but water levels had risen (Figure 46 and Figure 47).
- 14 September 2017 – after a 6 week gap in visits, a 'full tub' of creeping water primrose was pulled up from Round Pond. Most of these plants were on an area that had been under water at the time of the previous visit on 3<sup>rd</sup> August 2017 and had since dried out. This highlights the importance of visiting every two weeks to keep on top of the amount of biomass produced during this peak period of growth.
- 22 September 2017 – creeping water primrose was found within large mounds of *Crassula helmsii* at the edge of Round Pond. Also some fragments of creeping water primrose were found, for the first time since the excavation work, in exposed areas in the middle of the pond. The margins of Round Pond had become increasingly more difficult to check due to the colonisation by native plants and extensive areas of *C. helmsii*. One flowering plant of creeping water primrose and 'a few small sprigs' of creeping water primrose were found in Lower Pond which was sufficiently dry to be monitored but where dense growth of water mint affected the thoroughness of the search. (Figure 48).
- 9 October 2017 – one third of a tub of creeping water primrose was found in Round Pond, including plants growing on the exposed areas within the pond. The water mint had started to die down in Lower Pond where, after a thorough search, only one small 'strand' of creeping water primrose was found (Figure 49).
- 2 November 2017 – 4 'small sprigs' of creeping water primrose found in Round Pond (Figure 50). No creeping water primrose found in Lower Pond.
- 15 November 2017 – 'a couple of sprigs' of creeping water primrose were found in Round Pond where water level was very high (Figure 51). The disposal site was monitored; the re-seeded area was covered with nettles which made it difficult to survey but it 'had remained stable and intact'. There were no signs of any invasive non-native plants and the surrounding land had been brought back into arable cultivation (Figure 52).

On 15 November 2017 the Project Officer surveyed land elsewhere within the Breamore Estate along the left bank of the River Avon, south of the mill at Breamore (SU 16346 17442 to SU 16829 19606) and checked the channel, where visible from the road (SU 16023 17666 to SU 16243 17438). No creeping water primrose was found.



**Figure 42:** The Project Officer using boards to access pond during monitoring on 8 June 2017 (Photograph: Adam Gore)



**Figure 43:** The Project Officer monitoring on 8 June 2017 (Photograph: Adam Gore)





**Figure 44:** The Project Officer monitoring on 8 June 2017 (Photograph: Adam Gore)



**Figure 45:** The Project Officer monitoring on 8 June 2017 (Photograph: Adam Gore)





**Figure 46:** Volunteer who helped with monitoring of Round Pond on 3 August 2017  
(Photograph: Joanne Gore)



**Figure 47:** creeping water primrose found in Round Pond on 3 August 2017  
(Photograph: Joanne Gore)





**Figure 48:** By 22 September 2017 the margins of Round Pond had become difficult to check for creeping water primrose due to extensive growth of *Crassula helmsii* (Photograph: Joanne Gore)



**Figure 49:** Volunteer Brian Matthews with creeping water primrose dug up from Breamore Marsh on 9 October 2017 (Photograph: Joanne Gore)





**Figure 50:** Some of the creeping water primrose found in Round Pond on 2 November 2017 (Photograph: Joanne Gore)



**Figure 51:** Round Pond on 15 November 2017 (Photograph: Joanne Gore)





**Figure 52:** The disposal site was monitored on 15 November 2017 (Photograph: Joanne Gore)

Observations made by the Project Officer following monitoring during 2017:-

- Quick action last year prevented a massive outbreak of creeping water primrose in Lower Pond area. However due to the amount of native plant vegetation it must be constantly checked over the next few years to ensure that creeping water primrose does not establish. Most visits during 2017 produced at least a few strands and, if left, the pond would have been completely covered.
- Continued vigilance on Round Pond is still needed. A break of 6 weeks in the summer produced 8 times the amount of biomass of creeping water primrose. Extra care will be needed during 2018 as the re-growth of vegetation will make it harder to spot creeping water primrose. Care must be taken to find and remove any plants that are growing in the pond before they establish. Growth for the first time on 'beach' areas in the middle of the pond during 2017 suggests that this might be a problem in 2018 and growth must be tackled before the water recedes. Volunteer help will be needed for this for safety reasons.
- Surveys of River Avon have shown that, as far as can be reasonably ascertained, creeping water primrose has not reached the main river (between Breamore and Sandy Balls). It would be prudent to continue these walkovers during 2018 and continue to contact as many river users as possible to increase awareness about the potential problem of creeping water primrose.
- *Crassula helmsii* is once again a major problem in Round Pond and sometimes hides strands of creeping water primrose. The majority of the bare ground created by excavation is now completely covered by *Crassula helmsii*. It also occurs in the Lower Pond area but is not yet a big problem.
- Funding into 2018 is necessary to ensure the project's continued success.



### 3.10. Control during 2018

During 2018 the Project Officer visited Breamore Marsh to monitor and remove creeping water primrose:

- 17 May 2018 – water levels were too high for monitoring to be undertaken.
- 14 June 2018 – water level was still high which made monitoring difficult. 12 'small strands' of creeping water primrose were found in Round Pond. It was impossible to monitor Lower Pond.
- 5 July 2018 – 15 'strands/seedlings' of creeping water primrose found in Round Pond, all confined to the margins of the pond but not confined to one particular area (Figure 53). Part of Lower Pond was monitored but high water level and dense growth of water mint prevented a thorough check.
- 19 July 2018 – approximately 20 'strands' of creeping water primrose were removed from Round Pond (Figure 54 and Figure 55). No creeping water primrose found in Lower Pond.
- 16 August 2018 – water levels in Round Pond had fallen but were still higher than normal and 'vast amounts' of *C. helmsii* hampered surveillance. One flowering plant of creeping water primrose was found amongst marginal vegetation. In total approximately 15 – 20 plants of creeping water primrose were found, filling approximately one third of a tub. Some creeping water primrose was found in a moorhen nest and some found within *C. helmsii* (Figure 56 and Figure 57). No creeping water primrose was found in Lower Pond.
- 3 September 2018 – 5 'sprigs' of creeping water primrose found in Round Pond and one 'sprig' found in Lower Pond.
- 20 September 2018 – 'one strand and one sprig' of creeping water primrose found within *C. helmsii* in Round Pond. No creeping water primrose found in Lower Pond.
- 11 October 2018 – no creeping water primrose found in Round Pond or Lower Pond. *C. helmsii* very dominant in Round Pond and also present in Lower Pond.



**Figure 53:** Some of the creeping water primrose found in Round Pond on 5 July 2018  
(Photograph: Joanne Gore)





**Figure 54:** Round Pond on 19 July 2018 (Photograph: Joanne Gore)



**Figure 55:** Creeping water primrose removed from Round Pond on 19 July 2018 (Photograph: Joanne Gore)





**Figure 56:** Creeping water primrose growing in moorhen nest in Round Pond on 16 August 2018 (Photograph: Joanne Gore)



**Figure 57:** *Crassula helmsii* in Round Pond on 16 August 2018 (Photograph: Joanne Gore)



### 3.11. Control during 2019

During 2019 the Project Officer visited Breamore Marsh to monitor and remove creeping water primrose:

- 17 May 2019 – one small plant found in Round Pond, suspected to be creeping water primrose. Water level too high for Lower Pond to be monitored.
- 13 June 2019 – no creeping water primrose found in Round Pond (Figure 58). Water level too high for Lower Pond to be monitored.
- 19 July 2019 – 2' sprigs' of creeping water primrose found in Round Pond which was almost completely dry (Figure 59). 1 'sprig' of creeping water primrose and two areas approximately 30cm in diameter found in Lower Pond which was dry enough to walk on but where tall growth of water mint hindered thorough checking (Figure 60).
- 15 August 2019 – one 'small sprig' of creeping water primrose found in Round Pond. None found in Lower Pond.
- 12 September 2019 – no creeping water primrose found in Round Pond or Lower Pond. Grazing by cattle had reduced the height of the water mint in Lower Pond, thereby enabling a more thorough search to be undertaken.
- 15 October 2019 – one 'small sprig' of creeping water primrose found in Round Pond (Figure 61). None found in Lower Pond. The cows had eaten even more of the water mint which made surveillance much easier in this area (Figure 62). A small amount of the invasive non-native water fern *Azolla filiculoides* was found in Round Pond.
- 12 November 2019 – Round Pond checked for final time during 2019 monitoring season.

The New Forest Non-Native Plants Officers are very grateful to volunteer Brian Matthews who has generously given his time to help with the monitoring at Breamore Marsh (Figure 63).

The results of the monitoring undertaken during 2019 are shown on the map at Figure 64).



**Figure 58:** No creeping water primrose was found in Round Pond on 13 June 2019 (Photograph: Joanne Gore)



**Figure 59:** Round Pond was almost completely dry on 19 July 2019 (Photograph: Joanne Gore)





**Figure 60:** Creeping water primrose removed from Lower Pond on 19 July 2019 (Photograph: Joanne Gore)



**Figure 61:** The single 'sprig' of creeping water primrose found in Round Pond during monitoring visit on 15 October 2019 (Photograph: Joanne Gore)





**Figure 62:** Monitoring of Lower Pond was much easier on 15 October 2019 as cattle had grazed the dense growth of water mint (Photograph: Joanne Gore)



**Figure 63:** Volunteer Brian Matthews helping to monitor Round Pond (left) and Lower Pond (right) on 15 October 2019 (Photographs: Joanne Gore)



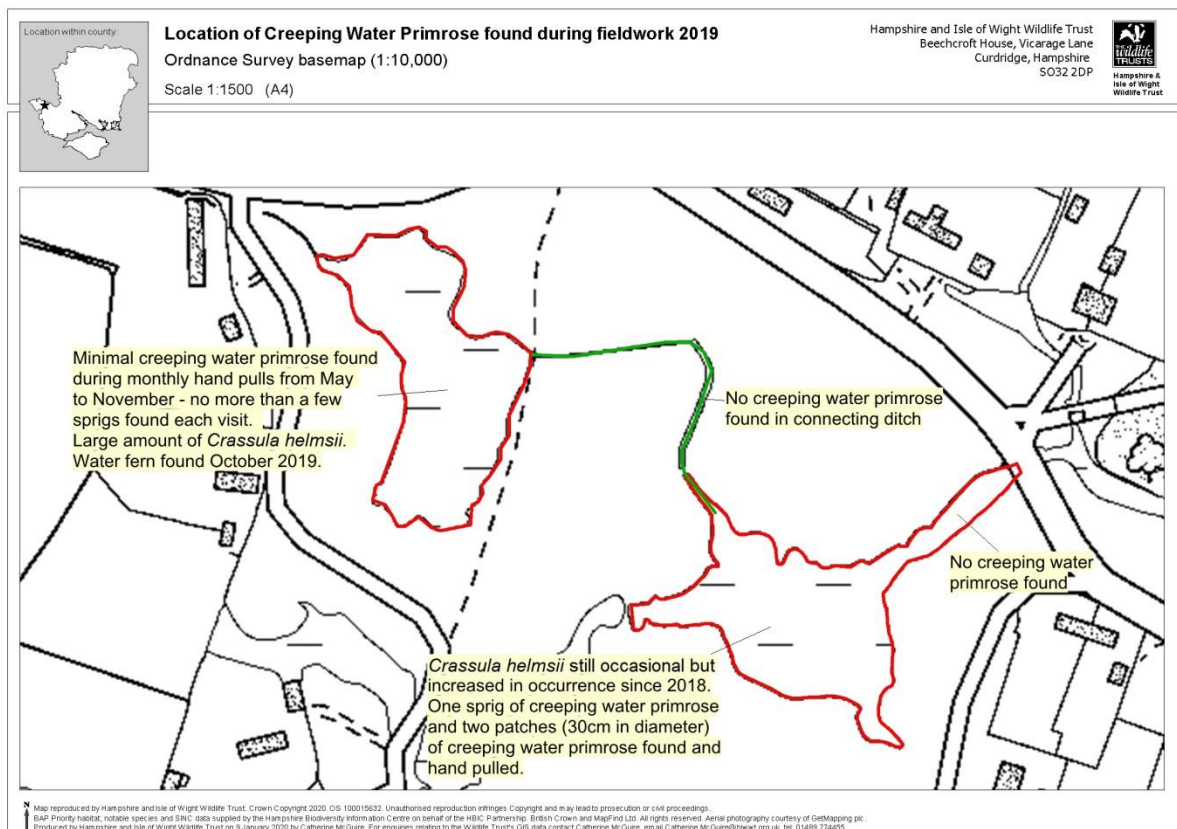


Figure 64: Map showing location of creeping water primrose found at Breamore Marsh in 2019

The monitoring undertaken has revealed that Breamore Marsh was the first site at which seedling formation was confirmed in the UK. This was a very important discovery as previously it had been assumed that it was only spread through vegetative means in the UK (Trevor Renals, *pers comm.*)

## 4. INTERNATIONAL LIAISON

### 4.1. Liaison with University of Shiga Prefecture, Japan

During July 2016 Professor Kamigawara of the University of Shiga Prefecture, Japan contacted the Project Officers. He is interested in the social aspects of invasive non-native plant management and was comparing a comparative study on the social response to the control of creeping water primrose in Japan, France and the UK.

Professor Kamigawara had read reports by both Project Officers and hoped to gain an insight into the work undertaken at Breamore Marsh to control this species.

On 8 September 2016 the Project Officers met Professor Kamigawara and his colleague Mr Shinya Hieda, a PhD student, to discuss control of creeping water primrose (Figure 65). A morning meeting at Testwood Lakes Education Centre was followed by a site visit to Breamore Marsh.

During September 2018 Joanne Gore hosted another visit to Breamore Marsh with Professor Kamigawara and his PhD student (Figure 66).



**Figure 65:** Joanne Gore with Professor Kamigawara and his colleague Mr Shinya Hieda, of the University of Shiga Prefecture in Japan, discussing control of creeping water primrose on 8 September 2016





**Figure 66:** Professor Kamigawara and his PhD student during site visit with Joanne Gore at Breamore Marsh on 13 September 2018 (Photograph Joanne Gore)

#### 4.2. Liaison with Chiba Prefecture, Japan

On 16 July 2019 The Project Officers received an e-mail message from Takayuki Odagami, Advisor at the Water Quality Division of the Environmental and Community Affairs Department of Chiba Prefecture in Japan. He said:-

“I am contacting you following the introduction of Prof. Kamikawara of Shiga Prefectural University. Upon reading your dissertation, I felt that you have a profound understanding of the elimination and management of the alien aquatic plant *Ludwigia grandiflora*, as well as the legal systems surrounding it.....We would like to visit you and learn about your country’s controls, legal systems, and management regarding this topic and we would like to hear your explanations about measures and control methods at the control site at a convenient date between September 3-7 or another nearby date. I would be honoured if I could make an appointment”.

On 6<sup>th</sup> September 2019 the Project Officers met Takayuki Odagami and four of his colleagues, namely Kenichi Fitakami (Nature Conservation Division, Chiba Prefecture), Taishi Shimomura (Chiba Prefecture Public Enterprises Bureau, Industrial Water Department, Chiba Industrial Water Office) and Shun Kataoka (River Environment Division, Land Development Department, Chiba Prefectural Government), with an interpreter at Breamore Marsh.

Joanne Gore outlined the discovery of creeping water primrose at Breamore Marsh in 2009, described the work undertaken (herbicide treatment, hand-pulling and excavation) to control it and described the subsequent monitoring (Figure 67 and Figure 68).





**Figure 67:** Joanne Gore with visitors from Chiba Prefecture, Japan, on 6 September 2019 by Round Pond at Breamore Marsh



**Figure 68:** Joanne Gore talking to visitors from Chiba Prefecture, Japan, on 6 September 2019 about the control of creeping water primrose at Breamore Marsh



## 5. THE NEED FOR FUTURE WORK

### 5.1. Work during 2020

Further monitoring is required during 2020 to ensure that any creeping water primrose growing on Breamore Marsh SSSI is found and removed.

HIWWT will seek funding from the Environment Agency or Natural England to cover the costs of monitoring and control during the financial year 2020/2021.

### 5.2. Work beyond 2020

It is important that monitoring continues beyond 2020. Trevor Renals, the Environment Agency's Senior Technical Adviser on Invasive Species, has advised that monitoring needs to be continued until no creeping water primrose is found for a minimum period of five years.

## 6. LESSONS LEARNED

### 6.1. Rapid response

As soon as creeping water primrose is discovered prompt action needs to be taken as any delay will significantly increase a) the risk of it spreading and b) the cost of control.

### 6.2. Funding and administrative procedures

Administrative procedures and provision of funding need to be fast-tracked to ensure that control work can be undertaken as soon as possible following the discovering of creeping water primrose. It is important that a flexible approach is taken to exploit favourable weather conditions.

### 6.3. Effective control work

Work undertaken to control creeping water primrose needs to be timely, vigorous, thorough and effective.

### 6.4. Thorough monitoring

Following control work, the site and its immediate catchment needs to be monitored thoroughly. It is recommended that when no creeping water primrose has been found, the site and its immediate catchment should then be monitored for a further period of at least five years to be confident that the creeping water primrose has been eradicated.

### 6.5. Co-operation of the landowner

It is vital to secure the co-operation of the landowner during the planning, implementation and monitoring phases.

### 6.6. Role of Local Action Group

Local Action Groups such as the New Forest Non-Native Plants Project and Source to Sea play an important role in the control of invasive non-native plants such as creeping water primrose. Their presence in the local community allows them to gain the trust and co-operation of landowners, local residents, local naturalists and volunteers. Through their connections with statutory bodies, Local Action Groups are able to alert relevant organisations to the need for funding and co-ordinate administrative procedures. Local Action Groups play an important role in raising awareness about the problems caused by invasive non-native plants, the need for responsible disposal of invasive non-native plants and the need for work to be undertaken to control infestations of plants such as creeping water primrose.

## 7. ACKNOWLEDGEMENTS

Hampshire and Isle of Wight Wildlife Trust are very grateful to the following people and organisations:

The Breamore Estate

Clive Chatters who discovered creeping water primrose at Round Pond during August 2009 and brought it to the attention of Natural England and the Environment Agency

Martin Rand, Vice County Recorder for VC 11 (South Hampshire) on behalf of Botanical Society of the British Isles who verified identification as *Ludwigia grandiflora*

Eric Clement who verified identification as *Ludwigia grandiflora*

Johan van Valkenburg of The Netherlands Plant Protection Service who visited Breamore Marsh in March 2013 and gave advice on control of creeping water primrose

Kingcombe Aquacare Ltd

Aquascience Ltd

Southern Counties Forestry Ltd

Sophie Thomas, formerly of Plantlife

Trevor Renals, Environment Agency, Senior Technical Adviser, Invasive Species

Anna Fraser, Environment Agency

Amy Wilson, Environment Agency

Julie Stubbs, formerly of Natural England

Simon Curson, Natural England

Megan Ellershaw, Natural England

Natural England and the Environment Agency for financial support towards the control of creeping water primrose at Breamore Marsh SSSI

Ruth Kernohan and Catherine McGuire, HIWWT, for preparing the maps used in this report

Sarah Jackson, Dr Ben Rushbrook and their colleagues in Hampshire and Isle of Wight Wildlife Trust's Ecology Team

Neil Sanderson Botanical Survey and Assessment

Great Britain Non-Native Species Secretariat

Source to Sea

The volunteers who have helped with the control of creeping water primrose at Breamore Marsh SSSI

Thanks to those people whose photographs have been reproduced in this report. The name of the relevant photographer or the source of the photograph is acknowledged beneath each picture. All other photographs have been taken by Catherine Chatters (New Forest Non-Native Plants Officer).



Hampshire and Isle of Wight Wildlife Trust are very grateful for funding towards the work to control creeping water primrose at Breamore Marsh including the following contributions from the Environment Agency, Natural England and the landowner:

<b>2009</b>	£969.96 from Natural England for herbicide treatment
<b>2010</b>	£969.96 from Natural England for herbicide treatment 2 x £969.96 from the landowner (via Higher Level Stewardship) for herbicide treatments
<b>2011</b>	2 x £878 from the landowner (via Higher Level Stewardship) for herbicide treatments
<b>(2012)</b>	No control work undertaken due to unfavourable weather conditions
<b>2013</b>	2 x £978.55 from the landowner (via Higher Level Stewardship) for herbicide treatments £1,127 from Natural England for botanical report by Neil Sanderson Botanical Survey and Assessment
<b>2014</b>	c. £27,000 from Environment Agency for works relating to excavation c. £20,000 from Natural England for works relating to excavation
<b>2015</b>	£2,000 from Environment Agency
<b>2016</b>	£240 from landowner £2,040 from Natural England
<b>2017</b>	£2,045 from Natural England
<b>2018</b>	£2,045 from Natural England
<b>2019</b>	£1,000 from Natural England

**NB the costs relating to the considerable amount of time spent by the Project Officer are not reflected in the above figures which mainly relate to contractor costs.**



**RINSE**  
Reducing the impact of non-native species in Europe



## 8. REFERENCES

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## 9. APPENDICES


### 9.1. Appendix 1 – Invasive Species Action Plan for *Ludwigia grandiflora*



**INVASIVE SPECIES ACTION PLAN**  
Version: 1.1. Last updated: August 2010

## Water Primrose (*Ludwigia grandiflora*)

**GB Priority - HIGH**



Timescale - Immediate

**Aim: To eradicate *Ludwigia grandiflora*\* from GB and prevent its re-invasion.**

**Objectives:**

1. Consider use of legislation to prevent sale, release and improper disposal in GB
2. Increase public awareness about this species
3. Eradicate the known populations in England and south Wales
4. Set up suitable monitoring of water bodies in Wales and England
5. Maintain surveillance in Scotland and rapidly respond if found
6. Minimise the risk of re-establishment from releases and movement from existing locations

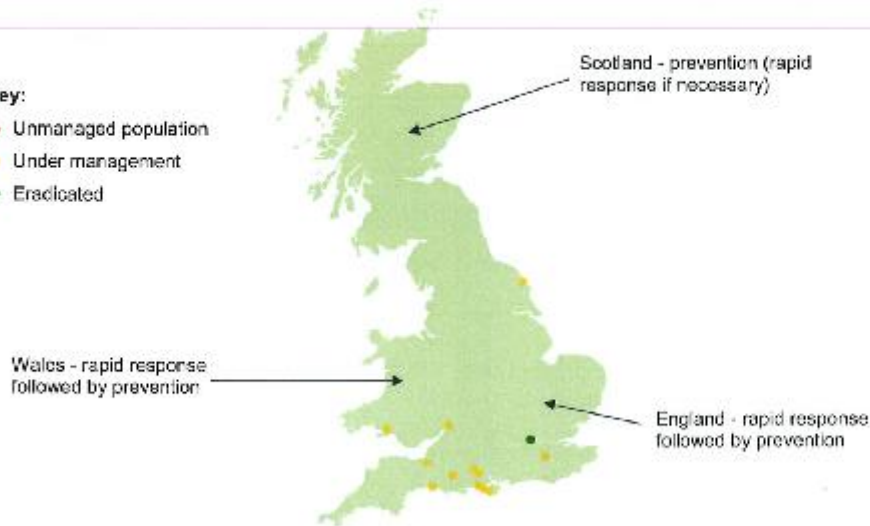
Aim	Action	Where	Co-ordinating body	Support	Start date
Prevention	Commence <b>Public Awareness Campaign</b> for water users and gardeners	GB	NNS	Various	<b>Complete</b>
	Discourage sale and proliferate the message that this species <b>should not be planted or released in GB</b> and appropriate <b>disposal</b> methods should be used to remove it wherever it grows	GB	NNS	plantlife EA, OATA, HTA	Ongoing
	Provide advice on <b>recognition and disposal</b>	GB	NNS	plantlife	Ongoing
Surveillance / early detection / rapid response	<b>Monitor</b> existing/controlled sites	E / W	EA / NNSIP	BSBI / plantlife	Ongoing
	<b>Survey</b> suitable locations	E / W	EA / NNSIP	BSBI / plantlife	Ongoing
	<b>Eradicate</b> in England and Wales	E / W	EA	plantlife	Ongoing
	<b>Watching brief and contingency plan for eradication</b> in Scotland	S	SNH / SEPA	RAFTS	Ongoing
Legislation	Consider adding to <b>Schedule 9</b> subject to normal consultation process.	GB	Defra, WAG, SG	-	<b>Complete</b>
	Consider <b>banning the sale of this species</b> subject to normal consultation process.	GB	Defra, WAG, SG	-	Ongoing
Research	Investigate <b>management techniques</b> (e.g. DeCLAIM project)	GB/ Netherlands	Defra	-	Mar 2009

\*References to *Ludwigia grandiflora* include the following:  
*Ludwigia peploides* synonyms: *Jussiaea californica*, *J. patibicensis*, *J. peploides*, *J. polygonoides*, *J. repens*. sub-species: *L. peploides*, *L. glabrescens*, *L. montevidensis*. *Ludwigia grandiflora* synonyms: *Jussiaea grandiflora*, *L. uruguayensis*, *J. uruguayensis*. *Ludwigia hexapetala*

www.nonnativespecies.org

**Key:**

- Unmanaged population
- Under management
- Eradicated



Risk Register		
Risk	Location	Mitigation
Refused access to land to enable control	England and Wales	Work closely with landowners to gain compliance. Consider whether access can be obtained under nuisance legislation.
Continued release: a. garden ponds b. water body owners	England and Wales	PR Campaign – on planting in the wild and disposal of aquatic plants Ban on Sale

**Measurable Outcomes:**

- Elimination of water primrose as a threat to the GB environment
- Increased understanding by the public of responsible plant management and disposal

**Updating and review:**

- This ISAP is subject to continual review and modification. See [www.nonativespecies.org](http://www.nonativespecies.org) for most current version.
- This ISAP will be reviewed and re-issued, at the latest, by 1 April 2011

**Supporting Documentation:**

- Link to [risk assessment documents](#)
- Link to [ID sheet](#)
- Link to website fact sheet containing [TBC]:
  - Summary and technical information about the species
  - Distribution map
  - Identification guidance
  - Links to management information
  - Guidance on relevant legislation
  - Additional sources of information
- Links to other relevant websites (Pondcheck, RISC, RAFTS)
- CEH report '[Development of eradication strategies for Ludwigia species](#)'
- Links to DeCLAIM project webpages (link to [EUPHRESCO](#))



## 9.2. Appendix 2 – Local Enforcement Decision – Breamore Marsh SSSI



### Local Enforcement Decision - Breamore Marsh SSSI

#### Our approach

We will not pursue an application for an environmental permit for the activity where:

- A decision making document and risk assessment is available on request showing that the material will be excavated, transported and buried in a manner that prevents further growth of the invasive species and/or spread of invasive species into the wild;
- The burial option is only considered after options to reduce the volume of material, and its reuse for composting and/or soil improvement has been eliminated on the basis of a less preferred environmental option, such as an unacceptable biosecurity risk;
- Burial is performed on ground of low habitat value in an area that is likely to be undisturbed, more than 7 metres away from an adjacent landowner's site;
- the material does not contain pollutants likely to pose a threat to groundwater quality;
- no waste is stored for more than 12 months prior to burial;
- the total volume of material to be buried does not exceed 1000 tonnes;
- the material does not contain Japanese knotweed, the burial of which is described within the Knotweed code of Practice, 2013; the large majority of the plant material for burial consists of invasive non-native plant species from aquatic, riparian and wetland habitats;
- You meet the relevant objectives of the Waste Framework Directive;
  - '... ensuring that waste management is carried out without endangering human health, without harming the environment and in particular:
    - (i) without risk to water, air, soil, plants or animals;
    - (ii) without causing a nuisance through noise or odours; and
    - (iii) without adversely affecting the countryside or places of special interest.'

#### Enforcement

In not pursuing an application for a permit, we will not normally take enforcement action unless the activity has caused, or is likely to cause, pollution or harm to health. For a more detailed explanation of this enforcement position, please see our [Enforcement and Sanctions](#) statement.

This local enforcement decision is only relevant for the one-off activity outlined in the document 'Breamore Marsh SSSI favourable condition project' dated 23.7.2014 and associated risk assessment dated the 28.7.2014. This local enforcement decision has been produced after the approval of a National Position Statement by the Modern Waste Regulation Panel but the document is currently in draft and will not be available in time for this activity.