

## Sow and Penk Internal Drainage Board (IDB) BAP area monitoring



River Sow floodplain ©Matt Jones

Baseline monitoring February 2016

## Introduction

The IDB has a direct capacity to exercise control over a number of watercourses within the Sow and Penk area (see Map 1), it is therefore of principal importance to suitably monitor the effect of work carried out on IDB maintained watercourses to assess its impact on the biodiversity of the wider riparian environment. To effectively monitor ecological systems in order to develop and deliver beneficial policies and practices, baseline data must be gathered to provide a benchmark to measure fluctuations in habitats or species populations over time (OECD, 2001), particularly in relation to appropriate habitat management and reducing biodiversity loss.

Staffordshire Wildlife Trust has been commissioned to monitor the extent of Water vole *Arvicola amphibious* and Flowering-rush *Butomus umbellatus* to help the IDB fulfil its duty conserve biodiversity.

## Current baseline data

A desktop study was carried out using Staffordshire Ecological Records (SER) ecological records database to output all existing records of Flowering-rush *B. umbellatus* and European Water Vole *A. amphibious* within the Sow and Penk IDB Biodiversity Action Plan (BAP) area. The current available data originates from a number of sources and surveys, notably records from structured surveys and monitoring including, but not limited to Staffordshire Mammal Group surveys, structured surveys carried out by Staffordshire Wildlife Trust and surveys undertaken as part of the data collection for the Flora of Staffordshire (Hawksford, *et al.*, 2011).

This data will form a primary baseline from which data collected through future surveys can be compared to monitor populations of *A. amphibious* and *B. umbellatus* and identify what this means in relation to the condition of the supporting habitats in the IDB area and influence future management regime changes (English Nature, 2001).

**Table 1: Flowering-rush (*Butomus umbellatus*) and European Water Vole (*Arvicola amphibius*) records from within Sow and Penk IDB BAP area as of January 2016**

Taxon Name	Common Name	Sample Location	Sample Location Name	Sample Spatial Reference	Sample Date	Survey Name	Sample Type	Obs Abundances (LC)
<i>Butomus umbellatus</i>	Flowering-rush	SJ81		SJ81	1954	Staffordshire BRC data	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush	SJ92C	Doxey Marsh	SJ909241	10/08/2001	Staffordshire Flora	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush			SJ92B	Unknown	Edees Flora (1972)	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush			SJ92F	Unknown	Edees Flora (1972)	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush			SJ92G	Unknown	Edees Flora (1972)	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush			SJ92W	Unknown	Edees Flora (1972)	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush	SJ92G	Alston car park	SJ932228	20/08/2001	Staffordshire Flora	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush	SJ92F	nr Queensville	SJ939218	20/08/2001	Staffordshire Flora	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush	SJ92L		SJ941224	26/07/2000	Staffordshire Flora	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush	SJ92Q	SJ92Q	SJ969217	Summer 2000	Staffordshire Flora	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush	SJ92W	Shugborough Park	SJ9922	21/07/2000	Staffordshire Flora	Field Observation	
<i>Butomus umbellatus</i>	Flowering-rush	Shugborough Park, Master Site	River Sow ornamental arm	SJ9922	21/07/2000	Consultants (WhA)	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Drumble and Platt Meadows	Drumble and Platt Meadows, Eccleshall	SJ808291	2001	OARP Surveys	Burrow, nest-hole	
<i>Arvicola amphibius</i>	European Water Vole	Whitgreave CP		SJ82	06/07/1981	Staffordshire BRC data	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Eccleshall Castle Mere		SJ825296	02/06/1978	County Survey 1978-84	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Staffordshire (modern County)		SJ83	Unknown	Staffordshire BRC data	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Staffordshire (modern County)	Trentham	SJ83	1969	Staffordshire BRC data	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Staffordshire (modern County)	Trentham	SJ83	1969	Staffordshire Mammal Group	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Meece Brook (SBI)		SJ8532	1969	Staffordshire BRC data	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Seighford CP	River Sow, Great Bridgeford	SJ886266	April 2002	OARP Surveys	Field Observation	1 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Seighford CP	River Sow, Great Bridgeford	SJ886266	09/05/2002	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Seighford Moor	Field O - Drain	SJ89082552	30/05/2008	Farming Floodplains for the Future	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Doxey Marshes SWT Nature Reserve		SJ9024	04/09/1989	Staffordshire BRC data	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Doxey Marshes SWT Nature Reserve	River Sow	SJ9024	May 1997	OARP Surveys	Field Observation	Present Count of colony
<i>Arvicola amphibius</i>	European Water Vole	Doxey Marshes SWT Nature Reserve		SJ905243	04/09/1989	Staffordshire BRC data	Field Observation	1 Count
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	outside Tesco	SJ9123	21/04/2001	Staffordshire BAP Records	Field Observation	2 Count of Adult; 4 Count of Juvenile
<i>Arvicola amphibius</i>	European Water Vole	Doxey Marshes SWT Nature Reserve	River Sow, Stafford	SJ913241	1975	Staffordshire BRC data	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Penkridge CP	River Penk, Cuttlestone Bridge	SJ914138	August 1996	OARP Surveys	Field Observation	Present Count of colony
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Castlefields balancing lake	SJ915229	30/11/2001	OARP Surveys	Field Observation	1 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Castlefields balancing lake	SJ915229	May 2002	OARP Surveys	Field Observation	1 pair Count of Adult; 2 Count of immature
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Castlefields balancing lake	SJ915229	06/11/2002	OARP Surveys	Field Observation	1 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Stafford Borough	Castlefields Pool	SJ915229	19/07/2006	SER General Records 2006	Field Observation	2 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	River Sow, Stafford	SJ918233	20/03/2000	County Recorders (AL)	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Staffordshire (modern County)		SJ92	1976	Staffordshire BRC data	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	small island in Victoria Park	SJ92092295	1984	Staffordshire BAP Records	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Bridge Street	SJ922230	Spring 2000	Staffordshire BAP Records	Field Observation	1 Count
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	River Sow near Borough Offices	SJ92342304	06/04/2001	County Recorders (AL)	Field Observation	1 Count of swimming
<i>Arvicola amphibius</i>	European Water Vole	River Penk: Penkridge	River Penk	SJ924145	23/05/2004	SER General Records 2004	Field Observation	1 Count of swimming
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92482356	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ925235	April 1997	OARP Surveys	Field Observation	Present Count of colony
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92592352	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	River Sow: East Gate (south of)	near Queensway	SJ926229	June 2002	OARP Surveys	Field Observation	1 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	River Sow: Littleworth (west), Stafford	Opp. Tesco's	SJ926230	19/06/2002	SER General Records 2002	Field Observation	1 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92632348	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92662348	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Forebridge Drain	SJ92672292	January 2003	OARP Surveys	Field Observation	1 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92702347	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92822330	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	River Sow	SJ928229	August 1996	OARP Surveys	Field Observation	Present Count of colony
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92852326	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Pearl Brook	SJ92872322	27/02/2003	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	River Sow (watercourse)		SJ929228	1996	OARP Surveys	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	River Sow: Littleworth (west), Stafford		SJ929228	20/08/1996	OARP Surveys	Field Observation	1 Count of colony
<i>Arvicola amphibius</i>	European Water Vole	River Sow (watercourse)	Riverway	SJ929229	23/08/2000	OARP Surveys	Field Observation	1 Count of Breeding confirmed
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	River Sow, Stafford	SJ93132283	25/01/2000	County Recorders (AL)	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	River Sow (watercourse)		SJ934228	1996	OARP Surveys	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	River Sow: Littleworth (east), Stafford		SJ934228	20/08/1996	OARP Surveys	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Dove Meadow Drain	SJ93652247	1975 - 1985	Staffordshire BAP Records	Field Observation	
<i>Arvicola amphibius</i>	European Water Vole	River Sow: Littleworth (east), Stafford	R. Sow nr Littleworth	SJ93762290	April 2004	SER General Records 2004	Field Observation	1 Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Staffs and Worcs Canal: Tixall Bridge (west of)		SJ946227	March 1998	OARP Surveys	Field Observation	Present Count of colony
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'	Staffordshire and Worcestershire Canal	SJ947228	03/03/1998	Staffordshire BRC data	Field Observation	Present Count of colony
<i>Arvicola amphibius</i>	European Water Vole	Stafford 'CP'		SJ948228	16/04/1974	Staffordshire BRC data	Field Observation	Present Count of Adult
<i>Arvicola amphibius</i>	European Water Vole	Rawbones Meadow	River Sow	SJ985227	September 1996	OARP Surveys	Field Observation	Present Count of colony
<i>Arvicola amphibius</i>	European Water Vole	Colwich CP	main drain running through Rawbones Meadow	SJ992228	13/02/2003	OARP Surveys	Field Observation	

## Brief interpretation of current baseline data

Within the Sow and Penk IDB area there are currently (as of January 2016) 11 recorded instances of *B. umbellatus*, the earliest record of this species was in 1954 and the most recent was recorded in 2001 as part of the data collection for The Flora of Staffordshire, where a significant proportion of the records originate from (see Table 1). Data collection for the Flora of Staffordshire only required a presence or absence count of a species within each of Staffordshire's tetrads<sup>1</sup> owing to the relative imprecision for these species records.

There are 51 recorded instances of *A. amphibious*, the earliest record was in 1974 and the most recent was in 2008 with records consistent between those dates suggesting a population has likely been present in the area from the 1970's into the 2000's (see Table 1). The majority of these records originate from the Otters and Rivers Project (OARP) from 1996-2003.

Distribution of both *A. amphibious* and *B. umbellatus* records occur in the greatest density toward the 'central' section of the Sow and Penk IDB area starting just north of Stafford on the River Sow and moving downstream to its confluence with the River Penk. There are however several more sporadic records of both species from elsewhere within the area stretching to the extreme North, South and East of the area as illustrated in Map 2.

This 'central' stretch of watercourse in the Sow and Penk IDB area also plays host to a number of designated conservation sites; starting with Seighford Moor SBI<sup>2</sup> and Doxey and Tillington Marshes Site of Special Scientific Interest SSSI (and Staffordshire Wildlife Trust (SWT) nature reserve) to the North of Stafford, providing suitable habitat conditions for both *A. amphibious* and *B. umbellatus*. Heading southwards further downstream throughout the conurbation of Stafford there are also some areas of good quality habitat with a number of riparian/wetland Local Wildlife Sites (LWS); finally reaching the confluence of the rivers Sow and Penk with Radford Meadows SWT nature reserve situated on the Northern end of the River Penk and Baswich Meadows SSSI slightly further East along the River Sow providing more suitable habitat for both species (see Map 3).

## Conclusions

The combination of the high density of designated conservation sites supporting good quality habitat alongside the concentration of IDB maintained watercourses within the 'central' section of the IDB area are providing ideal conditions in support of the relative abundance of records of both *B. umbellatus* and *A. amphibious*; however this does not necessarily directly link either, or a combination of both factors to the abundance of records. Some of the species records in Table 1 pre-date IDB management. Further structured surveillance over the following 4-5 years will audit and review the current data on these species; this is vital data for the IDB given the number of maintained watercourses occurring within or adjacent to designated nature conservation sites (map 4) which, as evidenced have provided habitat for these species within the Sow and Penk IDB area in the past.

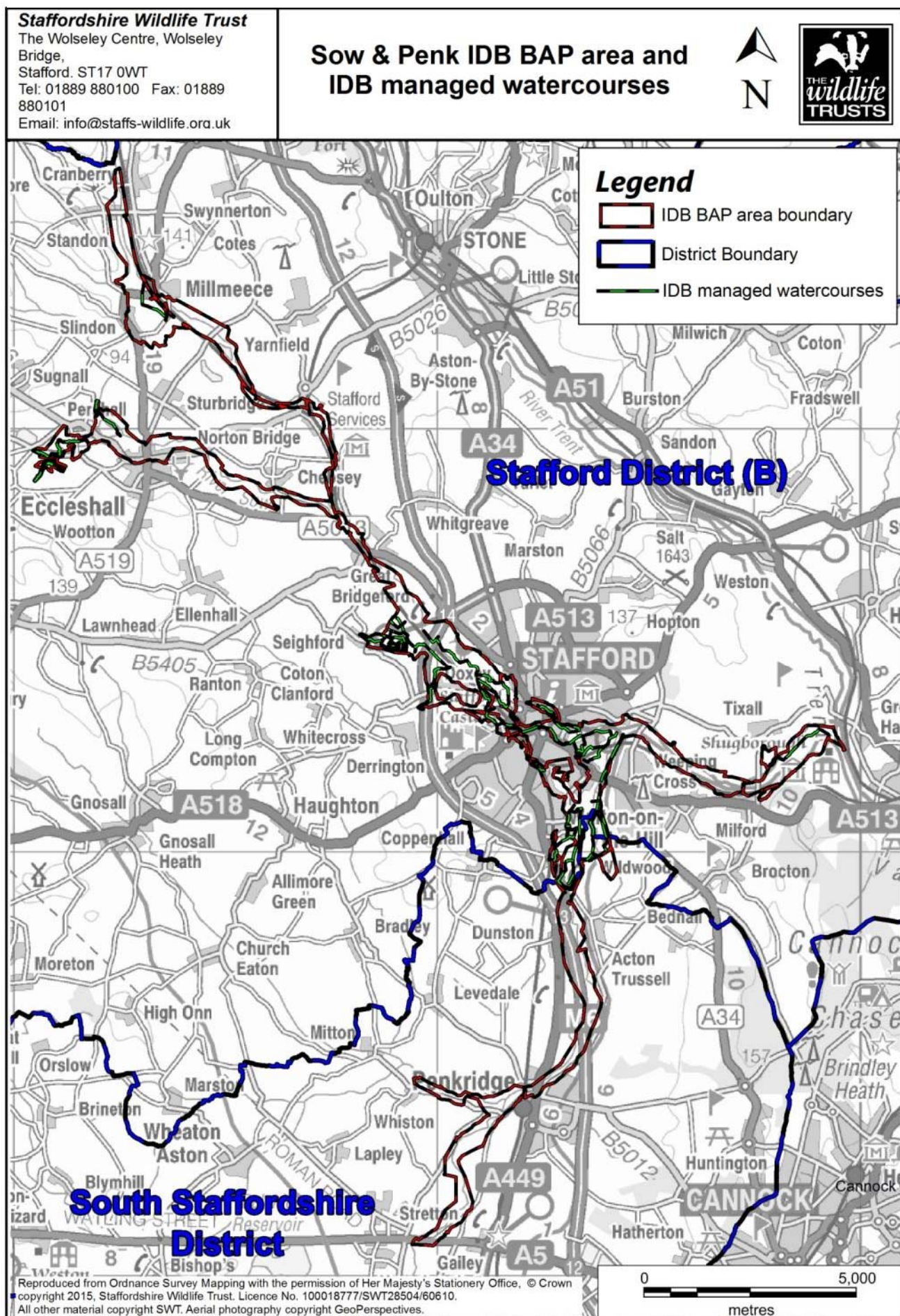
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<sup>1</sup> A tetrad is a 2km x 2km square used in conjunction with the British Ordnance Survey national grid, tetrads are used frequently in biological recording of flora to maximise efficiency in recording widespread species.

<sup>2</sup> Staffordshire's non-statutory Local Wildlife Sites are termed Sites of Biological Importance (SBI) or Biodiversity Alert Sites (BAS) where they are of county or borough/district importance respectively.

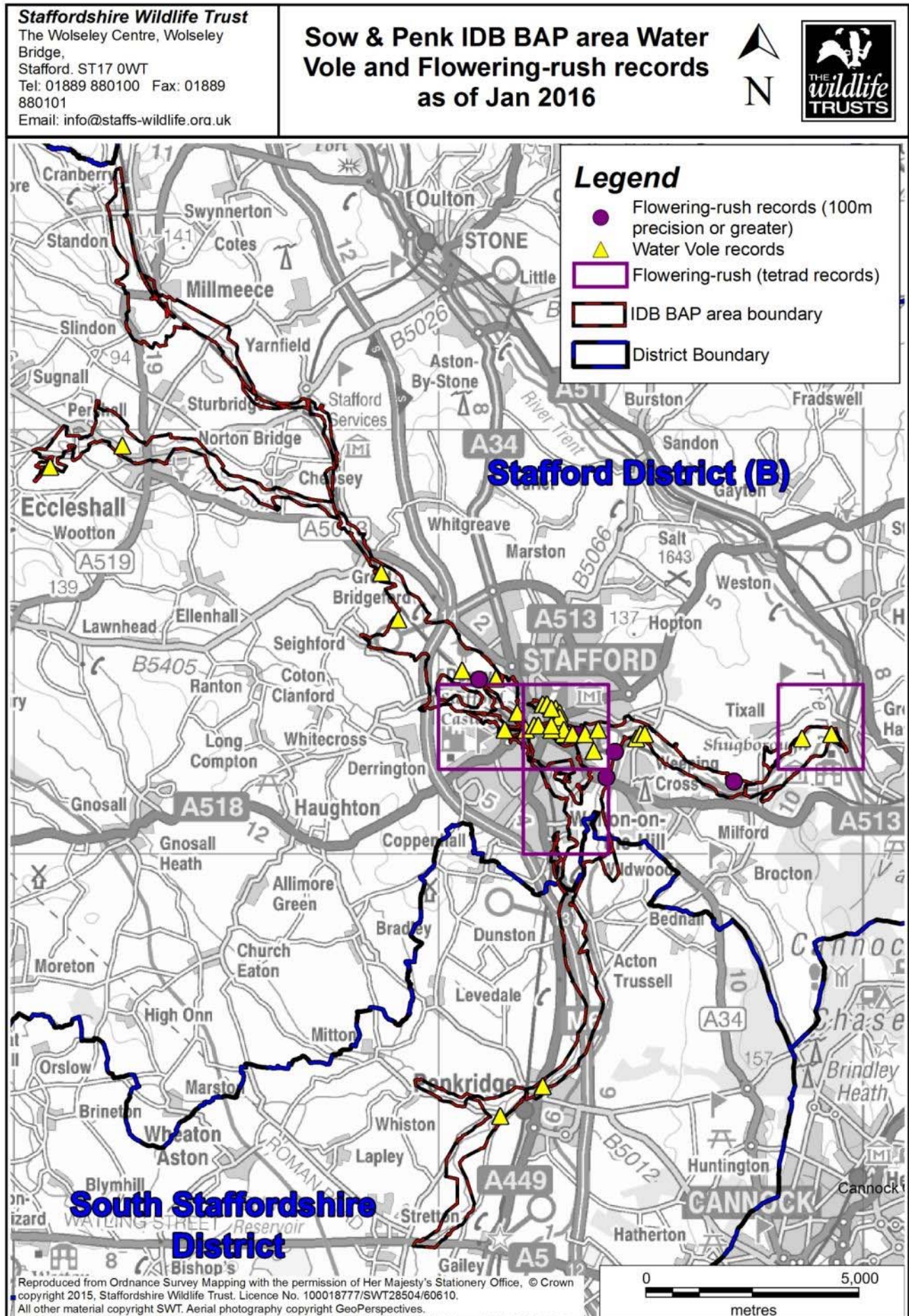


Map 1: IDB managed watercourses within the Sow and Penk IDB BAP area



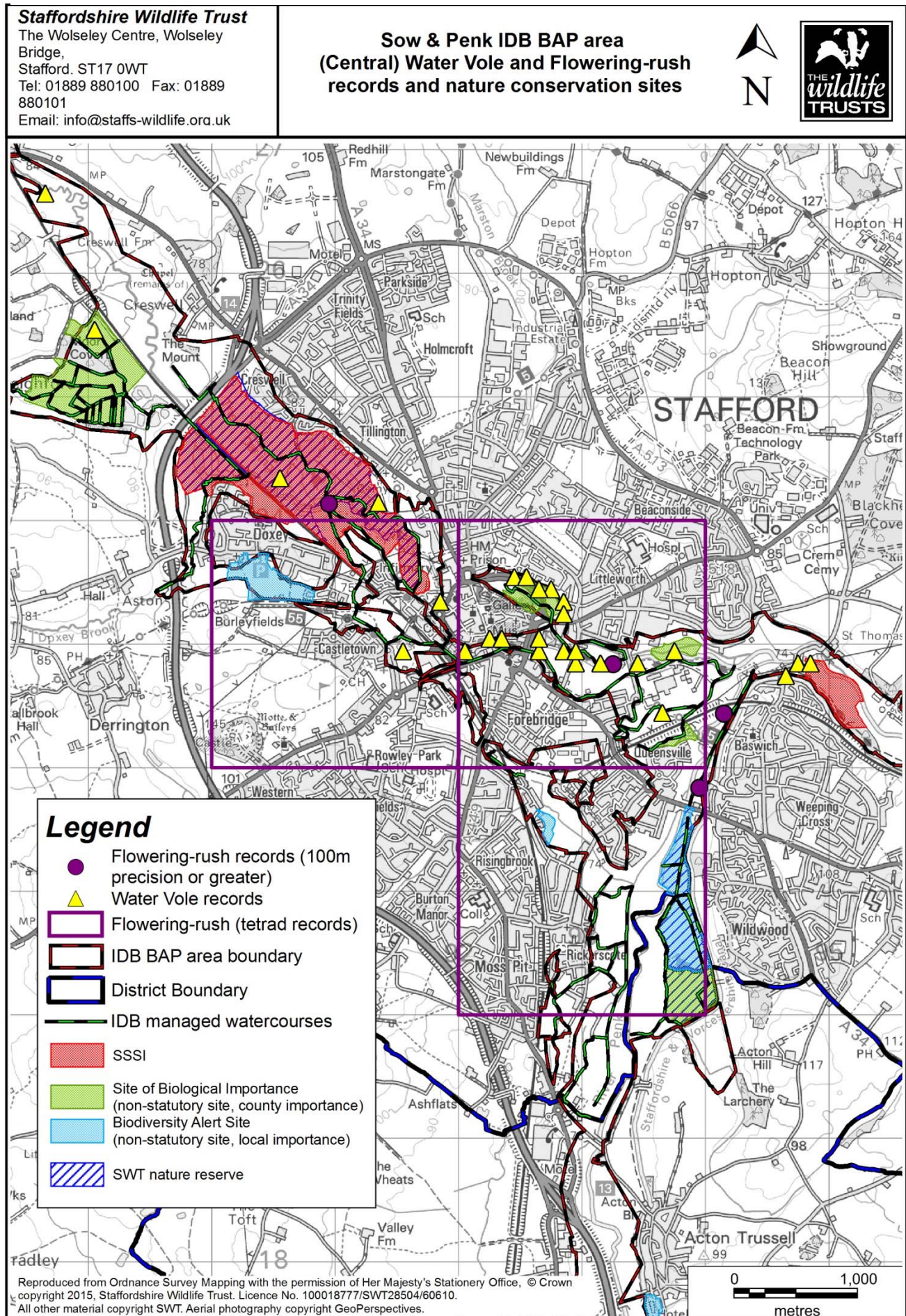


Map 2: European Water Vole *Arvicola amphibious* and Flowering-rush *Butomus umbellatus* records as of January 2016 within the Sow and Penk IDB BAP area



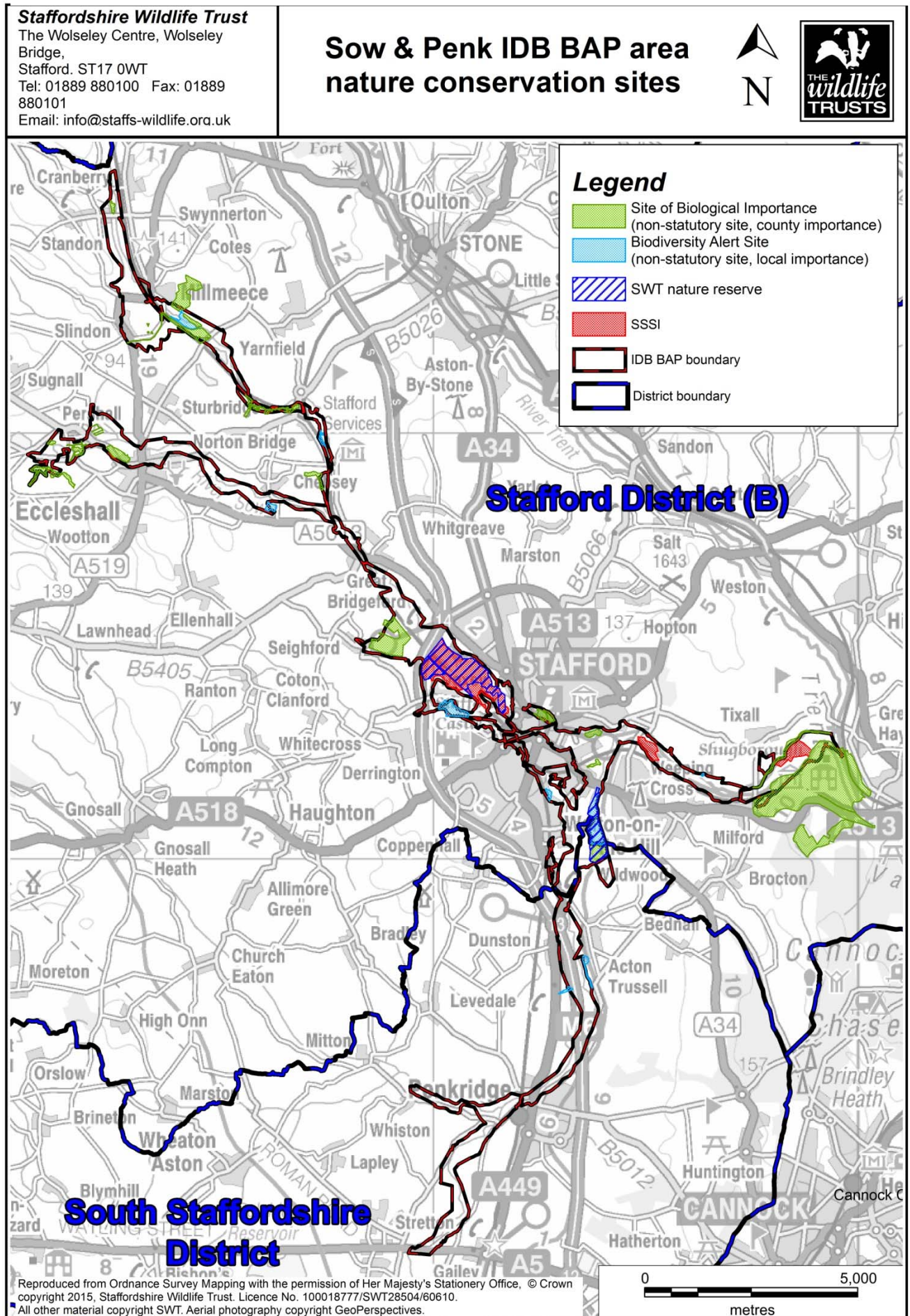


**Map 3: 'Central' area of Sow and Penk IDB BAP area with designated nature conservation sites, IDB maintained watercourses and European Water Vole *Arvicola amphibius* and Flowering-rush *Butomus umbellatus* records as of January 2016**





Map 4: Designated nature conservation sites within the Sow and Penk IDB BAP area.





## **Bibliography**

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